

LIBRARY RESOURCES & TECHNICAL SERVICES

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Editorial: The Delicate Balance, Standards vs. Customization

One of the eternal issues with which we grapple is the degree to which our decisions about library operations and internal processes promote their conformity to standards or reflect more individualized approaches. The needs of all libraries to serve their clients with timely acquisition of materials, easy access to collections, and appropriate programs and services can be met in different ways, depending on how librarians in each institution perceive the utility and effectiveness of standard methods versus customized ones. But, being human, most of us would like to have our cake and eat it, too. What we really want are standards tailored to serve our individual needs. Few of us are happy to sacrifice our own needs in order to serve the needs of other institutions more effectively.

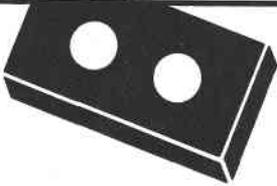
What do we tend to assume about standards versus customization? Librarians think of standards as generally good and cheap, while customization is better, though expensive. This is a flawed assumption, one that can be dangerous in some contexts, e.g., that maintaining standards such as name and subject authorities is cheap, or that purchasing customized cataloging will always provide better service to one's clients in the long run.

In general, we get what we pay for. Knowing what is important among competing goals is the key to success in obtaining the greatest value for our libraries and our clients. We seek a delicate balance between serving ourselves and others, between conforming to standards and doing things "our way," and we manage an ever-changing equilibrium as best we can.

The lead article in this issue explores serials standards, an area in which uniformity and consensus have been elusive. Authors Tseng, Arcand, Brugger, Finn, Olson, and Somers survey the use of standards at major institutions, and their findings will heighten our awareness of the issues. One research note also examines standards: Studwell's short piece on the as-yet-unrealized subject code. But several more items deal with standards application, including Tucker's case study of unruly titles proper and Boss' and Delsey's overviews of serials systems.

Other areas of library collections and technical services are included in this issue as well. The research process is explored by Reynolds. Paskoff and Perrault seek a tool for comparing collection analyses. Markey shows how enhancing online databases with classification can affect access. Education and training are the focus of articles by Schmidt and Kershner, respectively, and Lawson shows that technical service librarians help educate library clients in Missouri.

This issue of *Library Resources & Technical Services* is an eclectic one, covering a broad range of issues and ideas.—Sheila S. Intner, Editor.



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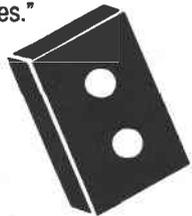
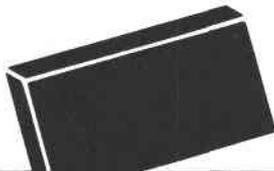
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Interaction: Letters to the Editor

From J. McRee Elrod, Director, Special Libraries Cataloguing, Inc., North Vancouver, B.C.:

An earlier feature of library professional literature was give-and-take in the form of letters to the editor. This is an effort to revive that tradition A major difficulty we have is with what on the surface (i.e., from the information in the records) appears to be the same type of records with differing types of entry. One example of this is artist exhibition catalogues which may appear with main entry under artist, under title, under gallery, or under author of the catalogue text. Our clients demand consistency and prefer artist as main entry. The distinctions upon which LC makes the choice of entry (as announced in *CSB #45* are not visible from the record, and not possible for us to apply, either, since we most often work from photocopied front matter. We noticed that LC's CIP records suffer from the same difficulty. The choice of heading is often arbitrary and inconsistent. The voice of the user in our case is clear: ENTER EXHIBITION CATALOGUES UNDER ARTIST.

Another example is title main entry versus corporate body main entry for corporate body "reports." The distinction (also announced in *CSB #45*). . . is whether the report contains recommendations of the body. Again, this is not information apparent in the record, nor from front matter, and results in records which appear the same on the surface having different principles applied in the selection of the main entry. Our clients demand that records which appear the same be treated in the same manner, and that distinctions be apparent to the catalogue user. . . .

We are left wondering if academic and public library patrons react as our clients do, or if they passively accept the ever finer distinctions being spun by the creators of international data bases. . . .

Sheila S. Intner replies:

Not only would library catalog searchers benefit from rules that result in more consistent choices and displays, but so would catalogers and original cataloging production figures as well as cataloging professors who must spend hours explaining the logic behind what seem to be illogical and conflicting decisions.

From Marvin H. Scilken, Director, Orange (New Jersey) Public Library:

Thank you for printing the definitive research results on the secret page ("The Secret Page," *LRTS* 33 (3):281-83). I thought the secret page was a gnome that shelves and "edges" our books.

From Sarah Hager Johnston, Director, Technical Research Services, The Hartford [Insurance Co.], Hartford, Connecticut:

Please allow me to address my fellow readers: Nearly a year ago . . . I submitted a manuscript to *LRTS* hoping for publication. Although the manuscript was rejected, the peer review process brought forth many constructive criticisms and suggestions. . . . I redesigned the study, and submitted a new manuscript to another professional journal; this time, the review was favorable, and the article was published. The new study also generated a second article . . . to be published early in 1990.

The whole process has been a tremendous learning experience for me. I hope that others will not be discouraged by an initial rejection. . . . Take the suggestions in the spirit in which they are offered. . . .

From Lee Ash, Library Consultant, Bethany, Connecticut:

Congratulations on the excellence of *LRTS*. Every issue, however, puts me off from reading until the next one comes and I realize I haven't looked at the last. . . . Reason? Your ghastly covers. . . .

Sheila S. Intner replies:

I'm glad you like *LRTS* even if you object to the cover design. . . . [P]rofessional graphics people at ALA have redesigned the cover. You may like it better. . . .



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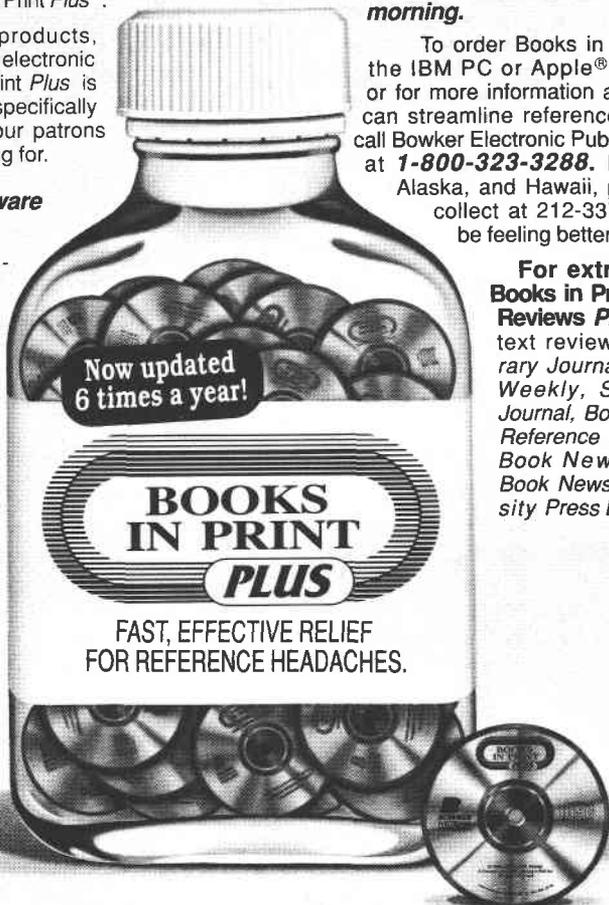
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Serials Standards Work: The Next Frontier

Sally C. Tseng, Janet L. Arcand, Judith M. Brugger,
Margaret Finn, Anton J. Olson, and Sally Somers

Serials, one of the more complicated areas of library technical endeavors, has lacked the benefit of standards for a long time. Even now, with standards beginning to be available, the majority of institutions are not working within standard serials formats. A survey to determine the use of serials standards in libraries was conducted in 1988 by the American Library Association, Resources and Technical Services Division, Serials Section, Committee to Study Serials Standards. In the spring of 1988 a survey was sent to a group encompassing the Association of Research Libraries members, CONSER participants, United States Newspaper Program participants, Microform Project libraries, and some vendors and librarians who attended the Committee meetings on a regular basis.

The survey questionnaire assessed the current level of serials standards awareness of librarians and vendors. Topics included the type of serials systems used, standards relevant to serials control and union listing and whether or not they are implemented, types and levels of training staff received in the application of standards, benefits of the standards, and areas where standards are most needed.

As automated systems expand into new areas such as binding, cancellation, claiming, ordering, and other controls, the importance of existing and developing national standards for serials cannot be ignored. In May 1988 the ALA RTSD Serials Section Committee to Study Serials Standards (called Committee to Study Serials Records before July 1988) designed a questionnaire and conducted a survey to determine the use of serials standards in libraries.

Sally C. Tseng is Principal Serials Cataloger, University of California, Irvine and Chair, ALA RTSD SS Committee to Study Serials Standards; Janet L. Arcand is Serials Acquisitions Librarian, Iowa State University; Judith M. Brugger is Fine Arts Cataloger, Olin Library, Cornell University; Margaret Finn was Head, Engineering/Architecture/Math Library, Catholic University of America; Anton J. Olson is Head, Technical Services, Northwestern University Medical Library; and Sally Somers is Assistant University Librarian for Technical Services, Tulane University, New Orleans, Louisiana. Sally C. Tseng thanks all Committee members, serving from 1986-1989, for their good work in designing, conducting, and analyzing the survey data and in compiling the findings. Special thanks also go to the librarians (appendix B) who took time to participate in this survey.

Our goal was to assess the current level of standards awareness of both librarians and vendors and to encourage the implementation of national standards. Three hundred libraries were selected to participate in this survey. These libraries encompassed the Association of Research Libraries members, CONSER participants, United States Newspaper Program participants, Microform Project libraries, and some vendors and librarians who attended the Committee meetings on a regular basis.

SUMMARY OF GENERAL FINDINGS AND SYSTEMS IN USE

GENERAL: TYPES OF LIBRARIES

The total number of responses received was 94 with the overwhelming majority (69) coming from academic libraries (figure 1). A wide range of types of libraries was represented in the responses including academic, public, law, medical, state historical societies, and nonacademic research libraries such as the Library of Congress, National Agricultural Library, National Library of Medicine, and the National Library of Canada.

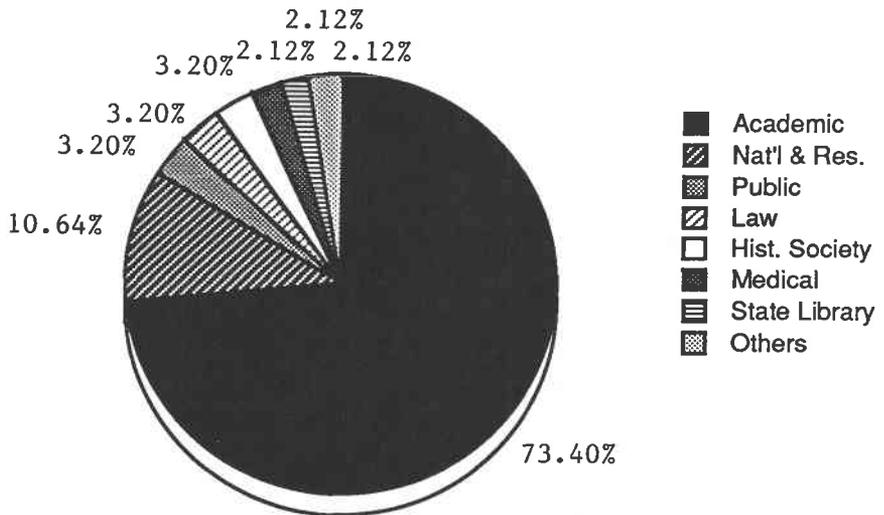


Figure 1. Types of Libraries

Questions 1–10 focused on whether a library’s serials activities were automated or manual and the specific system used if the library reported that an automated system was used.

QUESTION 1: SERIALS CHECK-IN

In response to question 1, asking whether serials check-in was automated or manual, 34 libraries (38%) indicated check-in was automated and 57 (62%) indicated they operated a manual check-in system.

NOTIS and INNOVACQ were the most frequently used vendor systems although they were closely followed by GEAC and the FAXON LINX system. Several libraries reported using a system developed in-house that they did not name (figure 2).

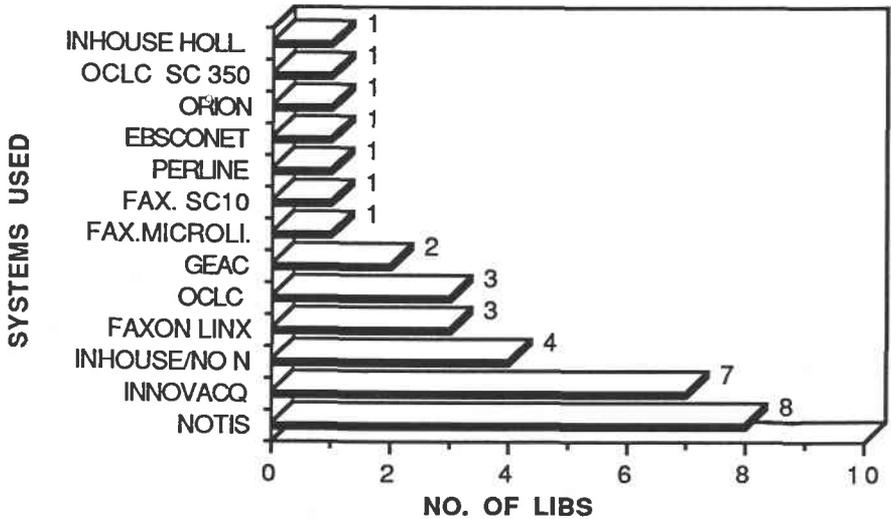


Figure 2. Serials Check-in Systems Used

QUESTION 2: SERIALS HOLDINGS

Question 2 dealt with whether libraries had automated their serials holdings. Fifty-one libraries (55%) reported that they had automated serials holdings while 37 (40%) reported they had manual serials holdings and 5 (5%) did not answer the question.

The most numerous vendor-based systems were NOTIS (10) and OCLC (11). In this category, however, the largest response of automated libraries indicated they used systems developed in-house (13) (figure 3).

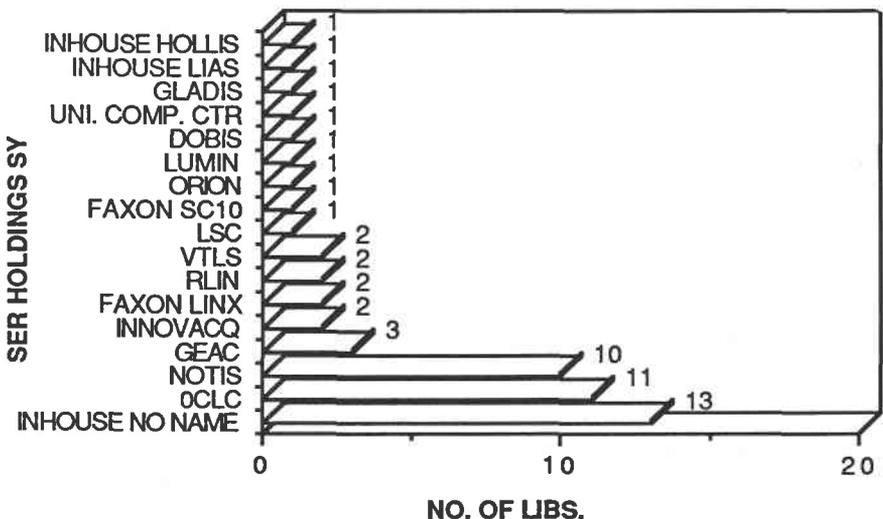


Figure 3. Serials Holdings Systems Used

QUESTION 3: SERIALS CLAIMING

Serials claiming is still largely a manual operation. Fifty-four libraries (58%) reported they operated a manual serials claiming system, while 37 (40%) indicated they had automated serials claiming; 2 libraries (2%) did not answer the question.

At least 5 libraries reported using a vendor-based system for claiming titles ordered through the vendor (FAXON or EBSCO or others); otherwise they were running a manual system. Among those libraries indicating they were automated, INNOVACQ, NOTIS, FAXON, MicroLINX, and Ebsconet were used most frequently (figure 4).

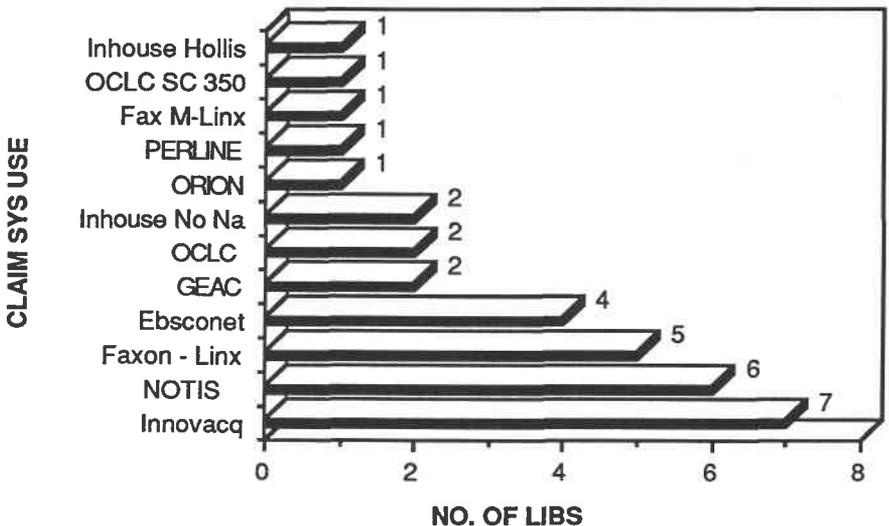


Figure 4. Serials Claiming Systems Used

QUESTION 4: SERIALS BINDING CONTROL

Question 4 surveyed the state of automation of serials binding. The majority of libraries (58) (62%) responding to this question reported they operated a manual system. Twenty-seven (28%) reported their operation was automated; 9 (10%) did not answer the question.

Of those indicating they were automated the largest number (9) used a system developed in-house. INNOVACQ was used by 5 libraries and among the bindery developed systems the ABLE, Heckman, and Hertzberg systems were mentioned.

QUESTION 5: SERIALS ACQUISITIONS

Responses to question 5 about serials acquisitions/ordering indicated an almost even division between automated and manual systems. Forty-five (48%) indicated their serials acquisitions were automated; 46 (49%) still operate manual systems and 3 (3%) did not answer the question.

At least 3 libraries reported using a vendor-based system for orders sent

to them (EBSCO or FAXON) and otherwise running a manual acquisitions system. Among those using automated systems, INNOVACQ and NOTIS were the vendor-based systems used most frequently; a significant number (9) reported using an in-house developed system.

QUESTION 6: SERIALS FISCAL CONTROL

Question 6 on serials fiscal control represents another area in which libraries that responded are about equally divided among automated (42) (45%) and manual systems (44) (47%); 7 (8%) did not respond.

Fifteen reported they operated their fiscal control system on an in-house developed system while INNOVACQ was the clear leader among vendor systems (figure 5).

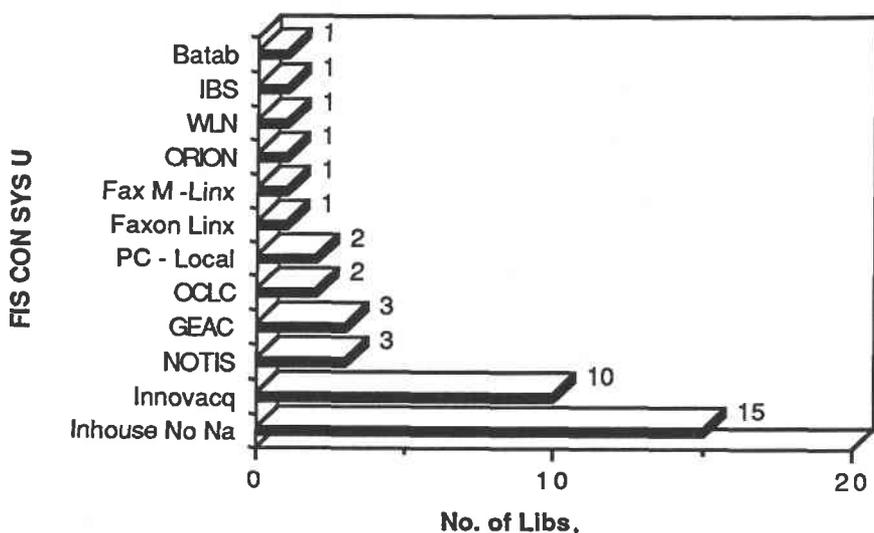


Figure 5. Serials Fiscal Control Systems Used

QUESTION 7: ONLINE CATALOG INCLUDES SERIALS

Sixty-eight libraries (73%) indicated they have an online catalog that lists their serials; 17 (18%) reported they had only a manual system while 8 (9%) did not answer the question.

One library reported an online catalog with no periodicals but other serials. Four libraries reported an automated online catalog, but didn't specify the name. Among the vendor-based systems NOTIS and GEAC were the most numerous used; however, the exceptionally large number of systems used by libraries (24) is worth noting.

QUESTION 8: ONLINE CATALOG INCLUDES SERIALS HOLDINGS

Question 8 surveyed whether libraries had online catalogs with serials holdings included in them. Fifty-one libraries (55%) reported they had automated this aspect while 26 (28%) reported they were manual and 16 (17%) did not answer the question. NOTIS was the most frequently used

vendor-supported system (9) but an exceptionally large number of systems was mentioned.

QUESTION 9: CIRCULATION INCLUDES SERIALS

Question 9 surveyed the question of circulation. Forty-eight (48) libraries (52%) indicated they have automated circulation systems while 33 (35%) operated manual systems; 12 respondents (13%) did not answer the question.

A significant number of libraries (8) operate a system developed in-house. Among the vendor-based systems CLSI, NOTIS, and GEAC were cited most frequently (figure 6).

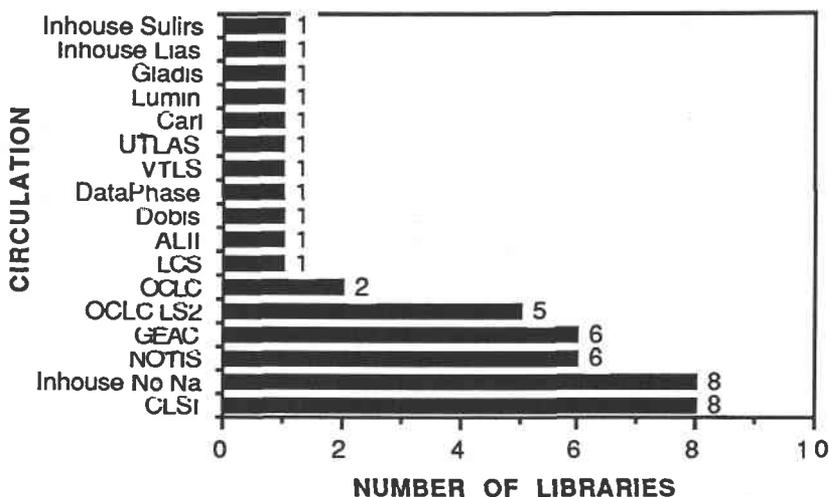


Figure 6. Serials Circulation Systems Used

IMPLICATIONS OF THE FINDINGS

The wide range of automated systems, including those developed in-house, points to the importance of utilizing national standards. As automated systems continue to develop, libraries will move from system to system. The ability to move all types of records associated with serials including bibliographic, binding, check-in, claiming, fiscal control, and holdings information becomes increasingly important. If libraries adhere to national standards moving from one system to another becomes little more than a matter of loading tapes with the relevant data into the new system. Vendor-based systems are also developing and undergoing change. Although two systems, NOTIS and INNOVACQ, seem to dominate the field at the present time, the survey indicates that there are a large number of vendor systems used by research libraries. It seems likely that movement within this group will continue as libraries learn more about their needs with serials and automation.

Whether libraries use an in-house system or a vendor-based system the need for them to utilize national standards is abundantly clear. The need to

encourage vendor-based systems to adopt and to implement national standards is of vital importance in library automation.

SUMMARY OF FINDINGS ON STANDARDS

GENERAL

The International Standard Serial Number (Z39.9-1979 (R1984)) was, of all standards listed in the questionnaire, the one with the highest favorable response. This was the only standard a simple majority of responding librarians felt was in use in their libraries. A large percentage (72%) of respondents made some use, either partial or full, of some of the standards affecting holdings information. Thirty-six percent made use of the Summary Level Holdings (Z39.42-1980) in their libraries; 33% made use of the standard that superseded it: Summary Level Holdings (Z39.44-1986), and 21% made use of the USMARC Holdings/Location standard. Thirteen of the respondents indicated that they had implemented, either fully or partially, both Z39.42-1980 and Z39.44-1986. The response to questions on the use of Claims for Missing Issues of Serials (Z39.45-1983), Computerized Serials Orders, Claims (Z39.55-198X), Serial Item Identifier (Z39.56-198X), Standard Address Number (Z39.33-1977 (1982)), and the SISAC Code was largely or overwhelmingly negative.

QUESTION 11: INTERNATIONAL STANDARD SERIAL NUMBERING—Z39.9-1979 (R1984)

Fifty-four libraries indicated that they had fully implemented use of the ISSN, while 14 had made partial use of it. Their percentages of 57% and 15% respectively combine to indicate that 72% of the libraries surveyed were making conscious use of the ISSN in their operations. Eighteen libraries (19%) did not use ISSN and 8 (9%) did not answer the question.

Ten libraries indicated they had implemented use of the ISSN from 1971 to 1979 while 12 had implemented its use between 1980 and 1987, and others did not provide the year of implementation.

QUESTION 12: SUMMARY LEVEL HOLDINGS—Z39.42-1980

Twenty-four libraries (25%) made full use of this standard, and 9 libraries (10%) made partial use of it in their operations. Their percentages of 25% and 10% combine to make 35% of all respondents. Approximately 51 libraries (54%) indicated they were not using this standard and 10 (11%) did not answer the question. Fourteen libraries implemented the standard in full or partially since its publication in 1981. Two of the libraries that were not using it indicated that they had plans to implement it in 1988 or 1989.

QUESTION 13: SERIALS HOLDINGS STATEMENTS (SUMMARY AND DETAIL LEVEL HOLDINGS)—Z39.44-1986

Fifteen respondents made full, and 16 made partial implementation of this standard. Their percentages were 17% and 18%, respectively or 35% altogether. Fifty-five libraries (56%) did not use the standard and 8 (9%) did not answer the question (figure 7).

Eighteen libraries began implementation from 1982-1988. Some of

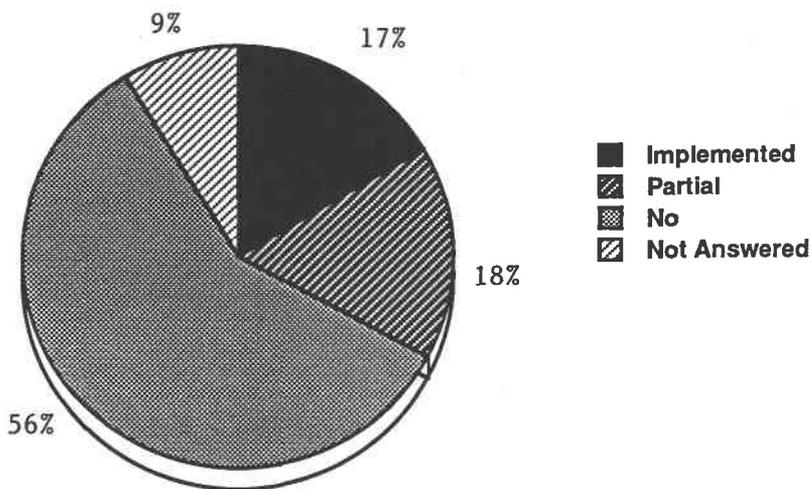


Figure 7. Summary and Detail Level Holdings Z39.44-1986

these libraries implemented the standard for the U.S. Newspaper Project. Again, two of those libraries not currently implementing this standard had plans to do so in 1989 or 1990.

Note: 51 respondents use either Z39.42-1980 or Z39.44-1986, its successor, in some form or another.

QUESTION 14: COMMUNICATION OF HOLDINGS/LOCATION DATA—USMARC HOLDINGS

For those answering positively, 14 made full use, and 5 made partial use of this standard. Their respective percentages, 15% and 5%, combine to produce 20%. Sixty-three libraries (67%) did not implement the standard while 12 (13%) did not answer the question. Seven libraries that had either given a negative response or not specified their response indicated that they had plans to use this standard between 1988 and 1989 (figure 8).

QUESTION 15: CLAIMS FOR MISSING ISSUES OF SERIALS—Z39.45-1983

Seven libraries were making full use, and 2 partial use of this standard. Their percentages, 8% and 2%, combine to indicate a rate of 10% overall. Seventy-three libraries (78%) did not use the standard and 12 (12%) did not answer the question. However, 3 libraries had plans to use it between 1988-1989.

QUESTION 16: COMPUTERIZED SERIALS ORDERS, CLAIMS—Z39.55-198X (DRAFT)

Two libraries made full, and two partial use of it. Their percentages of 2% each combine to an overall 4%. Seventy-six libraries (81%) did not use the standard and 14 (15%) did not answer the question. Five libraries indicated future plans for its use in 1988 or 1989.

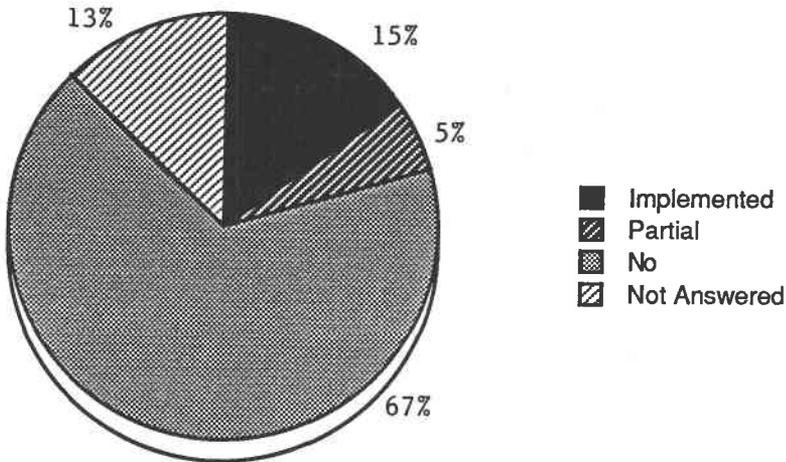


Figure 8. Data from USMARC Holdings/Location

QUESTION 17: SERIAL ITEM IDENTIFIER—Z39.56-198X (DRAFT)

One library each made full and partial use of this standard respectively. Their percentages of 1% each combine to form 2%. Seventy-nine libraries (84%) did not use the standard and 13 (14%) did not answer the question.

QUESTION 18: IDENTIFICATION CODE FOR THE BOOK INDUSTRY (STANDARD ADDRESS NUMBER (SAN))—Z39.43-1977 (1980)

Eight libraries made full use of this standard, and 4 partial use. Their percentages were 9% and 4% respectively, or a total of 13%. Sixty-nine libraries (73%) did not use the standard and 13 (14%) did not answer the question. Note: One library implemented this standard for the U.S. Newspaper Project only.

QUESTION 19: SISAC BARCODE ISSUE/ARTICLE IDENTIFIER—SISAC CODE

No library surveyed is yet using it in full, but 2 indicated making partial use of it. Seventy-nine libraries (84%) did not use the standard and 13 (14%) did not answer the question. Two more libraries indicated plans for the future use of the SISAC code in 1989.

There are a multitude of serial item identifiers in existence, some of which are in a kind of competition with each other and some of which are complementary. For example, the SISAC barcode is merely the special barcode symbology used to represent the Serial Item Identifier or SIID (Z39.56-198X). The SIID is made up of the ISSN, the issue date, and the issue number. The Serial Article Identifier (SAID) is composed of the same elements, but adds a page number and a title code to the string. The Serial Issue and Article Identifiers were developed at the national level and are compatible with the international standard, ISO 9115, also called the BIBLID. A competing and noncompatible serial item code is the ADONIS

identifier. It is a 16-digit code consisting of the ISSN, year of publication, and a 5-digit running number that begins at "1" for each calendar year of each journal. As page-independent code, ADONIS numbers have an advantage in that they can be assigned before a journal issue is actually printed. Unlike the SAID and SIID, however, users cannot generate them logically from complete bibliographic citations. Our survey considered two of these evolving identifiers, the SIID and the special symbology known as the SISAC barcode.

QUESTION 20: OTHER STANDARDS

There were few answers to this write-in question, but one national library brought up the fact that they were using ANSI Z39.5-1985 (Abbreviations of Titles of Publications). One library used locally developed holdings standards for summary holdings statements in a local online catalog and circulation system. These standards fall somewhere between level 3 and level 4 of holdings described in Z39.44.

SUMMARY TABLES

(See tables 1 and 2.)

TABLE 1
TOTALS OF ANSWERS TO QUESTIONS 11-19 PART B

	Yes	Partial	No	No Answer
11. ISSN (Z39.9-1979 (R1984))	54	14	18	8
12. Summary level holdings (Z39.42-1980)	24	9	51	10
13. Summary/detail level (Z39.44-1986)	15	16	55	8
14. Holdings/location data (USMARC Holdings)	14	5	63	12
15. Claims (Z39.45-1983)	7	2	73	12
16. Serials orders/claims (Z39.55-198X (draft))	2	2	76	14
17. Serial item identifier (Z39.56-198X (draft))	1	1	79	13
18. Standard Address Number (Z39.43-1977)	8	4	69	12
19. Barcode issue/article (SISAC code)	0	2	79	13

TABLE 2
PERCENTAGES OF ALL ANSWERS

	Yes	Partial	No	No Answer
11. ISSN (Z39.9-1979 (R1984))	57	15	19	9
12. Summary level holdings (Z39.42-1980)	25	10	54	11
13. Summary/detail level (Z39.44-1986)	17	18	56	9
14. Holdings/location data (USMARC Holdings)	15	5	67	13
15. Claims (Z39.45-1983)	8	2	78	12
16. Serials orders/claims (Z39.55-198X (draft))	2	2	81	15
17. Serial item identifier (Z39.56-198X (draft))	1	1	84	14
18. Standard Address Number (Z39.43-1977)	9	4	73	14
19. Barcode issue/article (SISAC code)	0	2	84	14

ADDITIONAL COMMENTS

Special libraries indicated they do not circulate their materials and they felt they have little need for those standards.

Some libraries indicated that since they lack the time, staff, professional

literature, or energy even to become aware of serials standards, they would like to be told the easiest way to obtain copies of the Z39 items. A list of current Z39 publications is cited with ordering information at the end of this article as a general reference.

A few libraries did not mark any answers or marked "No" often, but indicated that they followed all practices required by the utilities or vendor-based systems. These systems may or may not partially implement the standards. Some vendors developed their own standards before national standards were published and are reluctant to change.

Some libraries said that standards are not applicable to their present manual system, some use the vendors' Summary Holdings Statements in their online catalogs, and some vendors' standards are based on the ANSI draft standard.

IMPLICATIONS OF FINDINGS ON STANDARDS USE

Promotion of the implementation of serials standards is definitely needed and information on the availability of national standards will be helpful to all types of libraries. Librarians need to unite to request their vendors support and implement national standards, thus making it:

1. feasible to transfer data from one system to another without requiring major changes;
2. efficient in union listings; and
3. effective in sharing resources.

FINDINGS ON QUESTIONS 21-34

QUESTION 21: WHY DID YOU DECIDE NOT TO WAIT FOR A FINAL VERSION?

There was a high number of nonrespondents to this question. The total number of respondents who left the question blank or who responded with N/A (not applicable) was 63. While nonautomated libraries most frequently chose not to answer, many automated libraries also declined.

The most common answer ($n=14$), when one was given, was some form of what the Committee calls the "timetable" response: plans for automation were under way at the institution, and serials were expected to automate along with the rest, whether standards were available for them or not. Sometimes ($n=3$) the respondent clearly indicated that a funding timetable was involved. Some institutions indicated the timetable for system developments did not permit waiting for standards to be finalized. Some institutions said that their collections are too odd/strange for them to think about standards very much. Some received funds or grants for automation and could not wait for standards. Some institutions started automating in the late 1970s before many of the standards had been thought of. Another said it must work within fiscal realities, must be ready to move on projects. Other times it was clear that the timetable in question was a chosen vendor's incapacity to implement national level standards ($n=3$).

A few institutions with in-house systems ($n=2$) indicated that the special nature of their materials promised to cause problems for any set of serials standards. A few more ($n=3$) indicated that they were perfectly happy with the local standards they had to develop. Two institutions indicated

that they were still waiting for final versions of the standards before applying them.

One librarian had the honesty to respond that he/she had simply been unaware of the standards. A few institutions use what standards were available when they went into automation or built their union lists a few years ago.

QUESTION 22: HOW DID YOU DEAL WITH DIFFERENCES BETWEEN THE INTERIM DRAFT YOU APPLIED AND THE FINAL VERSION?

The total number of institutions that gave no response to this question was 73. Five other institutions indicated that, while they had not implemented any serials standards yet, they were making some preparations for future compatibility with the new standards. With their responses added in, the total number of institutions that didn't answer the question rises to 82. Some institutions ($n=5$) that had indeed implemented a draft standard did indicate that no changes were currently being made.

The responses given often lacked specificity. One institution said, for example, that the differences between the draft and the interim versions were minimal; but gave no indication as to how this minimal difference was being handled, if indeed any action was felt to be necessary. Some interesting information was nonetheless gleaned from this more tangential type of response, for example, "We have not changed our procedures for summary holdings for union listing since the vendor program cannot support the latest format yet."

Not all the responses were vague. One institution said it depended upon its good communication with the in-house programmers. Another indicated that as its system became capable of handling the new format, newer records would conform to the standard, while older records would be at the mercy of the transfer program. Some institutions ($n=5$) indicated that no changes were currently being made. One institution indicated that changes were being made only when older records came under scrutiny for other reasons. Some institutions stated their experiences with the interim draft helped in developing the final version; differences were minimal between their implementation of the draft and the published final version. One institution was requesting in its proposal for a new system that it meet the standards.

QUESTION 23: HOW DID YOU TRAIN YOUR STAFF IN THE APPLICATION OF STANDARDS?

The largest single category of response was, again, no response ($n=56$; N/A=24, and 0=32).

The range of detail offered by respondents varied widely, and can only be classified quite subjectively. One institution was content to state that "We showed them how we wanted data recorded," while another informed us that it used "Z39.44-1986 and the vendor's paper on holdings, which [was] discussed with the staff."

All kinds of training methods are in use: small groups orientations and workshops ($n=10$), one-on-one instruction ($n=7$); memos and procedure manuals ($n=14$), and self-instruction ($n=6$). Whether written or oral,

standards-training material was often integrated into other standard on-the-job training (n=7). Twenty-five of the 37 libraries that had a training method used more than one approach to standards training. One institution found that the ISSN, which was the only standard it used, required no special training.

Some institutions had librarians study the standards and prepare documentation or develop a local procedures manual with format examples. Some went through vendors' manuals with staff or issued local policy statements as needed.

QUESTION 24: WHAT LEVEL OF DETAIL DID YOU EXPECT THEM TO KNOW?

Only 50 of the libraries surveyed did not answer this question (0=35; N/A=15). Ten institutions required partial knowledge of the standard; eight required minimal; and four indicated that the level of knowledge required varied with the level of the staff involved.

Of those institutions responding, the majority (n=20) required their staff to have full command of the standard. The level of training that accompanied this expectation varied, with one institution requiring full command, but apparently relying on the serials cataloger and the serials librarian to educate themselves on the subject. However, there were also instances of no training, group and/or individual training, accompanying the full gamut of responses to this question. No pattern could be detected.

QUESTION 25: DID YOU DESIGN SPECIFIC TRAINING MATERIALS IN THIS AREA?

Eighty-four of the respondents gave a negative response to this question (34=0; 12=N/A; 37=No). Ten said that they did design specific training materials for standards.

All but one of the ten institutions that indicated they had designed specific training materials for standards work also indicated (in question 23) that they had some type of written procedures for the use of their staff.

In response to question 23, 37 institutions claimed to have trained their staff in the use of serials standards. Seven of these institutions made it clear that they had integrated the standards training into other training programs for other systems. However, in light of this question, that number should perhaps be adjusted upwards to 27. All in all, there was some troublesome correspondence in the answers to this part of the survey. One institution, for example, indicated in response to question 25 that it had relied upon vendor's documentation for their standards training; however, in response to question 23, it cited the standards document that it had had the staff read without reference to its provenance.

A handful of libraries responding to the questionnaire provided samples of their training documentation.

QUESTION 26: WHAT EFFORTS HAVE YOU MADE TO FAMILIARIZE YOUR PUBLIC SERVICES STAFF WITH THE STANDARDS YOU EMPLOY?

QUESTION 27: WHAT LEVEL OF DETAIL DID YOU ENCOURAGE THEM TO KNOW?

QUESTION 28: HAVE YOU DESIGNED ANY INFORMATION MATERIALS FOR THEM?

Questions 26–28 concern the promulgation of standards to the library staff itself—particularly public services staff. Training for standards interpretation took place both in general demonstrations and orientations to a library's automated systems and more commonly, in specific seminars given by technical services personnel. They developed and distributed guides, handouts, examples, memos, and other training materials. Understandably, the interpretation of holdings data was the most commonly mentioned topic for training sessions. The libraries' goal was generally to aim for an understanding of standards at the partial to minimal level. Very few libraries required their public services personnel to know the various standards fully. Public services staff, at some institutions, participated on all committees concerned with decisions to implement standards.

QUESTION 29: HAVE YOU TRIED TO APPLY STANDARDS AND THEN HAD TO TAILOR THEM FOR LOCAL USE?

In the area of application of standards the overwhelming indication of the libraries surveyed was to tailor standards to accommodate local usage. Only one library stated that it altered local practice in order to adhere to a national standard.

QUESTION 30: DO YOU FIND IT USEFUL IF THE VENDOR HAS APPLIED STANDARDS?

QUESTION 31: IN WORKING WITH VENDORS, HOW BENEFICIAL HAVE YOU FOUND STANDARDS TO BE?

When asked if they had found standards useful when working with vendors on questions 30–31, libraries responded in a resoundingly positive fashion. Cited among the advantages of standards implementation were ease of communication, efficient process and transfer of data, and how vital standards are to long-range planning efforts. Some institutions stated that if their vendors had incorporated standards in systems they would have implemented the standards. Unfortunately, some of the vendors, one of which was on top of the list as most used, do not use ANSI standards.

As might be expected, the standard most frequently cited as beneficial to a more efficient serials operation is the ISSN.

QUESTION 32: IN WHAT NEW AREAS ARE STANDARDS MOST NEEDED?

Only 24 libraries responded to this question. The majority of responses did not actually deal with new standards. Instead some respondents urged that draft versions of standards be finalized, while others urged more widespread adoption of existing standards. There were also a few respondents that seemed to be ignorant of the existence of several of the standards. There were suggestions concerning the need for some standards dealing with publishers' practices, such as standards for title pages, formats, enumeration, etc.

QUESTION 33: REASONS FOR NOT IMPLEMENTING STANDARDS?

As can be seen from the responses to Part B of the survey, use of standards relevant to serials control is not widespread. The only standard used by more than 50% of the libraries responding to the survey is the International Standard Serial Number (ISSN). Full or partial use of the other standards varied from 2% to 36%. The reasons given by libraries for this low level of use fall into five categories:

1. Twenty-eight libraries stated that they were waiting for the automation of their serials operations before adopting standards.
2. Nineteen libraries, most of which had automated their serials operations, said that the conversion of existing serial records to conform to standards would be too costly and time consuming. These libraries indicated that they either did not have the resources to undertake a conversion project, or that there was no real need or incentive to undertake such a project. These responses are evidence of one of the major obstacles to widespread adoption of standards. That is, the difficulties would outweigh any advantages gained from using standards for serial records.
3. Twelve libraries with automated serials operations responded that they were waiting for their vendors to implement standards in their system.*
4. Five libraries are waiting for the final versions of various standards before proceeding with their implementation.
5. Four libraries indicated that there were problems connected with the public displays of serials records using standards, and that this was what was delaying their implementation.

QUESTION 34: COMMENTS

Most respondents to the survey seemed to agree that standards are "essential" and "extremely important." Most libraries seem to wait until their serials operations are automated before adopting standards. But beyond automation is the costly and time-consuming process of converting serial records to conform to standards.

CONCLUSION

It seems unbelievable that serials, one of the more complicated areas of technical endeavor in the library, have lacked the benefit of standards for so long. Even now, with standards beginning to be available, the majority of institutions are not working within the majority of standard serials formats. Library administrators or other persons in control of the purse strings have had to make hard decisions about the scope of automation efforts in libraries. Rushes to automate have complicated continuing advances in serials standards work. Moreover, the naturally complex nature

*It is interesting to compare this response with the responses of six vendors who were interviewed during a preliminary survey of serials standard use in 1987. This survey was also done by the Committee. In that preliminary survey only one of the vendors said that it had implemented standards other than ISSN. Most of the vendors stated that they would respond to their customers' demands, but up to that time their customers had not insisted upon implementing serials standards.

of serials seems to have combined with a desire to set problems aside that retards the wholesale creation and acceptance of serials standards by systems vendors. But the most disheartening fact about serials standards work is that most technical services librarians don't seem to know about them, don't have anything to say about them, and haven't really considered them.

RECOMMENDATIONS

1. Members of the ALA RTSD SS Committee to Study Serials Standards recommend that there be more programs, workshops, and seminars on serials standards. There is a need for more education concerning the existence of standards, the content of these standards, and the advantages of using standards.
2. We recommend that there be a trial period for any new draft standards. Participating libraries should encompass all types of libraries so as to receive sufficient feedback and input before a draft becomes an official standard. Therefore libraries do not have to tailor them for local use at a later date.
3. We recommend that librarians strongly consider choosing and requesting systems that meet the standards as the prerequisite for long-range library planning efforts.
4. We recommend that programmers adhere to national standards and that there be a continuing effort to modify and make plans for modification of local or present systems to conform to national standards or to handle changes and revisions in available standards.
5. We recommend widespread adoption of standards for better communication, information exchange and sharing, data transfer from one system to another, union listing, etc.

APPENDIX A: NISO STANDARDS AVAILABLE AS OF MAY 1989

Z39.1-1977	Periodicals: Format and Arrangement
Z39.2-1985	Bibliographic Information Interchange
Z39.4-1984	Basic Criteria for Indexes
Z39.5-1985	Abbreviation of Titles of Publications
Z39.6-1983	Trade Catalogs
Z39.7-1983	Library Statistics
Z39.8-1977 (R1984)	Compiling Book Publishing Statistics
Z39.9-1979 (R1984)	International Standard Serial Numbering (ISSN)
Z39.10-1971 (R1977)	Directories of Libraries and Information Centers
Z39.11-1972 (1983)	System for the Romanization of Japanese
Z39.12-1972 (R1984)	System for the Romanization of Arabic
Z39.13-1979 (R1984)	Describing Books in Advertisements, Catalogs, Promotional Materials and Book Jackets
Z39.14-1979 (1987)	Writing Abstracts
Z39.15-1980	Title Leaves of a Book
Z39.16-1979 (R1985)	Preparation of Scientific Papers for Written or Oral Presentation
Z39.18-1987	Scientific and Technical Reports—Organization, Preparation and Production
Z39.19-1980	Guidelines for Thesaurus Structure, Construction and Use
Z39.20-1983	Criteria for Price Indexes for Library Materials
Z39.21-1980	Book Numbering (ISBN)
Z39.22-1981	Proof Corrections

- Z39.23-1983 Standard Technical Report Number (STRN), Format and Creation
 Z39.24-1976 System for the Romanization of Slavic, Cyrillic Characters
 Z39.25-1975 Romanization of Hebrew
 Z39.26-1981 Advertising of Micropublications
 Z39.27-1984 Structure for the Representation of Names of Countries, Depen-
 dencies, and Areas of Special Sovereignty for Information Inter-
 change
 Z39.29-1977 Bibliographic References
 Z39.30-1982 Order Form for Single Titles of Library Materials in 3-inch-by-5-
 inch Format
 Z39.31-1976 (R1983) Format for Scientific and Technical Translations
 Z39.32-1981 Information on Microfiche Headings
 Z39.33-1977 (R1988) Development of Identification Codes for Use by the Bibliographic
 Community
 Z39.34-1977 (R1983) Synoptics
 Z39.35-1979 System for the Romanization of Lao, Khmer and Pali
 Z39.37-1979 System for the Romanization of Armenian
 Z39.39-1979 (R1988) Compiling Newspaper and Periodical Publishing Statistics
 Z39.40-1979 (1987) Compiling U.S. Microform Publishing Statistics
 Z39.41-1979 Book Spine Formats
 Z39.42-1980 Summary Level Holdings (Superseded by Z39.44)
 Z39.43-1980 Identification Code for the Book Industry (SAN)
 Z39.44-1986 Serials Holding Statements
 Z39.45-1983 Claims for Missing Issues of Serials
 Z39.46-1983 Identification of Bibliographic Data on and Relating to Patent Doc-
 uments
 Z39.47-1985 Extended Latin Alphabet Coded Character Set for Bibliographic
 Use (ANSEL)
 Z39.48-1984 Permanence of Paper for Printed Library Materials
 Z39.49-1985 Computerized Book Ordering
 Z39.50-1988 Information Retrieval Service Definition and Protocol Specifica-
 tion
 Z39.52-1987 Standard Order Form for Multiple Titles of Library Materials
 Z39.53-1987 Codes for the Representation of Languages for Information Inter-
 change for Library Applications
 Z39.61-1987 Recording, Use, and Display of Patent Application Data in Printed
 and Computer-Readable Publications and Services
 Z85.1-1980 Permanent and Durable Library Cards
 Catalog
 Z39.55-198X (draft) Computerized Serials Orders, Claims, etc.
 Z39.56-198X (draft) Serial Item Identifier

The above standards are available from Transaction Publishers, Dept. NISO Standards, Rutgers-The State University, New Brunswick, NJ 08903.

NISO Standards are also available from ANSI, American National Standards Institute, and from the National Information Standards Organization, National Institute of Standards and Technology, National Bureau of Standards, Administration 101, Library Room E-106, Gaithersburg, MD 20899. Telephone: 301-975-2814. Patricia Harris, Executive Director.

SISAC stands for the Serials Industry Systems Advisory Committee. SISAC is an industry group formed in 1982 to develop voluntary standardized formats for electronically transmitting serial information and to present the formats for adoption as American national standards. For more information please contact: Book Industry Study Group, Inc., 160 Fifth Avenue, New York, NY 10010. Telephone: 212-929-1393.

APPENDIX B: INSTITUTIONS THAT PARTICIPATED IN THIS SURVEY

American Antiquarian Society
 California Institute of Technology
 Canada Institute for Scientific and Technical Information, National Research Council of
 Canada

Case Western Reserve University
Center for Research Libraries
Colorado State University
Columbia University
Cornell University
EBSCO Subscription Services
Emory University
Florida State University
Free Library of Philadelphia
George Washington University. Burns Law Library
George Washington University. Gelman Library
Harvard University
Historical Society of Pennsylvania
Iowa State University
Kansas State Historical Society
Kansas State University
Kent State University
Library of Congress. Serial Record Division
Library of Congress. Serials & Government Publications Division, Newspaper Section
Los Angeles County Law Library
Mississippi College
Mississippi Library Commission
Mississippi State University
National Agricultural Library
National Library of Canada
National Library of Medicine
New York Public Library
Newberry Library
North Carolina State University
Northwestern University
Northwestern University. Medical Library
Pasadena Dept. of Information Services
Pennsylvania State University
Queen's University
Rice University
Rutgers University
San Francisco State University
Smithsonian Institution
Southern Illinois University at Carbondale
State Historical Society of Wisconsin
State Library of Pennsylvania
State University of New York, Buffalo
State University of New York, Buffalo. Health Science Library
Syracuse University
Temple University
Texas Tech University
Trinity University
Union College
United States Dept. of the Interior. Division of Information & Library Services
University of Alabama
University of California, Berkeley
University of California, Davis
University of California, Irvine
University of California, Riverside
University of California, San Diego
University of Colorado, Boulder
University of Georgia
University of Hawaii, Honolulu
University of Hawaii, Manoa
University of Iowa

University of Kansas
University of Kentucky
University of La Verne
University of Lowell
University of Manitoba
University of Maryland, College Park
University of Massachusetts, Amherst
University of Miami
University of Mississippi
University of Missouri, Kansas City
University of Nebraska, Lincoln
University of Nebraska, Omaha
University of Nevada, Las Vegas
University of New Mexico
University of North Carolina, Chapel Hill
University of North Carolina, Charlotte
University of Oklahoma
University of Oregon, Eugene
University of Pennsylvania
University of South Carolina
University of Toronto
University of Utah
University of Virginia
University of Washington
University of Wisconsin, Madison
Virginia Polytechnic Institute & State University
Washington State University
Washington University, St. Louis
West Chester University
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Education for Acquisitions: A History

Karen A. Schmidt

Once an essential part of the library school curriculum, acquisitions in the present day rarely, if ever, is taught on a regular basis. Acquisitions is seen not simply as a specialization of a relatively few librarians, but as a fundamental part of the work of librarians in many settings. A review of early formal training in acquisitions and the textbooks pertaining to the subject, and an analysis of the literature provide an historical perspective on education for acquisitions, and suggest elements that may provide basic and adequate training in acquisitions useful to all librarians.

Acquisitions, the process by which libraries order, claim, and receive material, was once an essential part of the library school curriculum. In the early days of library science education, until the 1930s, training for acquisitions work was a fundamental part of any librarian's education and included detailed work in order processes, book and serial purchasing, discussions on the interworkings of the publishing industry, handling of gifts and exchanges, and accessioning, as well as some of the fundamentals of what we today call collection development.

Today, acquisitions rarely, if ever, finds itself the topic of concentrated learning in library schools. For those librarians choosing work outside the specialization of acquisitions, this deficiency appears to have little effect. It can be argued, however, that all librarians can benefit from knowledge of how a library procures materials, and how the economics of the publishing and bookselling industries affect our collections and our collecting. In addition, there are the many librarians who are themselves involved in acquisitions work, be it in smaller libraries in which one librarian may serve several functions or in larger libraries where size justifies a separate acquisitions department. Hewitt recently noted, "Acquisitions is a professional specialization learned almost entirely on the job. . . . Almost all librarians must deal with acquisitions as users of a service critical to their own functions, yet few are prepared to interact with acquisitions in an informed way."¹ Librarians handling acquisitions frequently find themselves reinventing the wheel from day to day, learning through serendipity and by mistake how to procure the materials their libraries need efficiently and economically. Among acquisitions librarians and their colleagues in the

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books and periodicals vending field, this lack of formal education is a vexing situation.

An historical review of formal education for acquisitions is useful in discovering the content of the lost training, and in discerning which of its elements might be resuscitated. The literature on education for professional acquisitions work is sparse. No single book, article, or chapter in a book covers the history of acquisitions education, and interest in the topic has been sporadic. To gain an historical perspective on the topic, it is useful to review courses on acquisitions that have been taught in selected library science schools. A review of acquisitions textbooks used in the past century of library education in the United States is equally helpful. Viewed in tandem with the few writings on the topic, one gains insight into how this aspect of librarianship has been treated.

LIBRARY SCHOOL PROGRAMS

Certain library education programs have set the tone for most of the other programs in the United States. This seminal group of schools includes Columbia College, established in 1886 (soon relocated to the New York State Department of Education in Albany), Pratt Institute (established in 1890), Drexel Institute (organized in 1892), Armour Institute (established in 1893 and soon relocated to the University of Illinois), the University of Chicago (which opened with Carnegie support in 1925 and offered the field's first doctoral program), and Columbia University (which absorbed the school in Albany and the program at New York Public Library). The initial establishment of these schools covers almost forty years, from the founding of Dewey's school at Columbia in 1886 to the establishment of the University of Chicago Graduate Library School in 1925. A review of these programs provides an intimate look at the development of acquisitions education in American library schools.

The oldest program, the Columbia College School of Library Economy (later the New York State School of Library Science and still later merged with the School of Library Service at Columbia University), also presented the first structured educational approach to acquisitions work. Unlike traditional programs of lecture and practice work, in which material such as cataloging was presented, acquisitions work was treated in 1886 with "other methods of instruction." These variant teaching methods, when applied to acquisitions (or "order work" as it was then called) involved "visits under guidance to representative houses, where can be learned to the best advantage so much as a librarian needs to know about publishing, book-selling, book-auctions, [and] second-hand bookstores."² In addition, "object teaching" was employed, including "buying, with warnings and suggestions on how to get the most for the money [with] various tables to show net cost to the library of books at the usual price per franc, marc [sic], shilling, etc., after adding commissions, fee, freight, insurance, duties, brokerage, etc."³ Finally, order work was also treated as part of a traditional lecture course on administration. That course addressed the basic order system, systems for indexing order files, creation of ordering forms, and receipt- and invoice-checking.⁴ Education in the technical aspects of librarianship, including acquisitions training,

was thorough and complete. In 1902, for example, the course outline describes the curriculum for the course entitled "Accession Department. Lecture and Practice" as "Acquisition of books, serials, pamphlets, ephemera; order slips and sheets, order and receipt indexes, serials checklist; price discounts, duty free importation; auctions, old book lists; duplicates, exchanges (domestic and foreign), gifts; reception . . . [and] . . . checking bills."⁵ By 1917, the course work was revised extensively and included a course on the more administrative aspects of acquisitions and cataloging. Study on this topic was condensed into one course covering "the book from the publisher through the departments of the library to the reader . . . [including] . . . book selection and book buying; American publishers, the book order department, its staff, [and] checking of invoices and order files."⁶

The method of training librarians for order work evolved at Columbia with little documented substantive change for several years. Course titles were altered, as in 1931-32, when "Library Records and Methods" was offered, including "the various steps in ordering,"⁷ but the content remained the same. In the late 1940s, however, the approach to acquisitions/order work and to other practical aspects of library science came under close scrutiny. In the 1945-46 annual report of the School, Dean Carl White perceived the need to separate library practice from library theory. Acquisitions work was seen as falling into the former category, as part of standard library procedures. White envisaged a "learning process as close as possible to what the athletic coach would call 'game conditions.' The introduction to the profession would be concrete, and . . . immediately applicable."⁸ As a consequence of this re-thinking of the practical aspects of library science, including acquisitions/order work, Columbia's approach to acquisitions training changed. In the following academic year a special program entitled "Workshop on the Acquisition of Resources in Research Libraries" was offered. It focused on the development of acquisitions programs and methods of obtaining material throughout the world.⁹ In the same year Columbia began to teach a required course in technical services. This course included an overview of "methods of acquisitions" designed not primarily to develop skills and techniques, but "to promote a critical understanding of practices and alternative methods."¹⁰ Since that time, Columbia has offered a similar kind of course in technical services. At various times it offered courses in advanced technical service problems and in book publishing.¹¹ The latter course might be perceived as a significant contribution to the education of librarians for acquisitions work, in that it addressed not only the business aspects of publishing, but also the relationship between librarian and publisher.

The Pratt Institute School of Library Training was founded one year after the New York State School of Library Economy. It offered "order-department work" as part of its first-year course. Examinations from the period prior to the turn of the century required students to "give routine of order department from making out of order slip to reception of book," and asked "How may foreign books be obtained by a library, and what method would you advise as most economical of time and money?"¹² Examinations in these classes also called for knowledge of selection practices. Stu-

dents were asked to recall where to look "for material for a complete list of the publications of the Cornwall Royal Institution, 1818–date."¹³ Like its sister institutions, Pratt realigned instruction on book-buying in 1915, removing it from the technical area of instruction and placing the topic within a course on administration.¹⁴ In the mid-1940s, taking a different tack from other library schools of the period, Pratt began teaching library department practices within the study of types of libraries. Acquisitions work for public libraries, therefore, was found in a series of courses concerning public libraries. By 1959, this, too, changed, and acquisitions was taught in a course on technical services administration. This method of handling acquisitions has continued at Pratt since that time.

Drexel Institute's School of Library Science was founded in 1892. It had a more independent approach to the teaching of acquisitions work. Drexel maintained a course devoted to order work and accessioning until the 1926–27 academic year.¹⁵ At that time, instruction in order work became part of a class in the administration and history of libraries. In what may have been an experimental change in 1931, Drexel offered a course entitled "Order Work and Trade Bibliography," providing a study of "the uses of the principal trade and national bibliographies in connection with order work."¹⁶ By 1934–35, "library methods" was taught as part of one course, and included instruction in acquisitions, accessioning, and other library routines.¹⁷ This course was separate from courses on administration. In 1950, acquisitions work was covered as one of the administrative aspects of managing a college or university library,¹⁸ and by 1954, all references to acquisitions had been dropped from the course catalogs.¹⁹ When Drexel added its program in information science in the mid-1960s, the School began to offer a course entitled "Acquiring and Organizing Science Materials," covering the selecting, ordering, and organization of published scientific information.²⁰ This specialized approach to acquisitions was later dropped, and acquisitions as a topic was not treated in any course.

The University of Illinois School of Library Science (founded at the Armour Institute in Chicago in 1893 and transferred to the University of Illinois in Urbana-Champaign in 1897) had a course devoted to work in the order department as part of the first-year work. As with other library schools, this course included work with accessioning and the shelf list. A typical description from the 1910–1911 *Circular of Information* describes the order work course as such:

16. ORDER, ACCESSION AND SHELF WORK. The subjects treated in this course are indicated by the following: the order department records and routine, book-buying, publishers and discounts, copyright, serials and continuations, gifts, exchanges, duplicates, the accession book and its substitutes, the shelf list and its uses, and the care of pamphlets, clippings, maps, etc.²¹

Lecture notes preserved from this period indicate that the course not only taught routine tasks such as the correct method of opening books and cutting leaves, but also provided detailed discussions on obtaining books at auctions and through second-hand dealers, and the legal aspects of handling duplicates. A class examination from 1895 asked "Should a small

library buy books in large lots at long intervals, or in small lots at shorter intervals? Give reasons."²²

Until the 1970s, it was more or less standard operating procedure at the University of Illinois library school to offer a course concerned with order work. In 1928–29, in addition to the regular course on order work, a course entitled "Book-buying for the Large Library" was added for second-year students.²³ It continued to be taught until the mid-1930s, but later was dropped. In 1942, a course on publishers was added for graduate students only, presenting information on the evolution of book publishing and book trade practices in relation to the library.²⁴ Three years later, courses on order work were dropped, and any specific reference to acquisitions did not reappear until 1960. At that time, a course on technical services was introduced²⁵ and has been offered off and on at the school since that time.

The University of Chicago Graduate Library School was established in 1925 to provide graduate work only; admission presumed that the student already possessed the entry-level professional degree of the period, a fifth-year bachelor of arts degree. The Graduate Library School approached education for acquisitions as it approached many other aspects of traditional library education, by eschewing any discussion or teaching of the topic. The GLS *Announcements* for 1929–30 state: ". . . the School does not duplicate the usual first-year curriculum of other graduate library schools. Hence persons desiring systematic courses belonging to this first-year curriculum are advised to attend some other library school" [their emphasis].²⁶ All instruction related to technical processes was handled through individual research, and topics were closely controlled. Suggested topics included studies in typographical history.²⁷ Five years later the school began to offer a course entitled "The Administration of Technical Operations." This course included instruction on the ". . . routines for the incorporation of acquired books into the collections of a library, beginning with their purchase. Typical procedures will be analyzed with respect to cost and efficiency, and the effect of the order of operations."²⁸ In the summer of the 1939–40 academic year, the GLS relaxed its restrictive approach to acquisitions education even further, and introduced a course entitled "Order Work and Records." Described as "a discussion of the methods used in acquisition departments for the locating of materials to be purchased, their acquisition and incorporation into the collection . . . [including] accounting," this summer course was offered during the regular term in the following year. In 1943–44, the GLS returned to instruction on the administration of technical operations.²⁹ This format for addressing acquisitions and other aspects of technical services continues to the present day.

Viewed together, education in acquisitions among these schools has a homogeneous history. With the exception of the University of Chicago, as noted above, all the schools provided some instruction in order work at the first-year level. The curriculum changed during the 1920s, with less emphasis on the practical aspects of library management. Acquisitions, as well as courses in accessioning, indexing, and binding, were amalgamated into one course on library or technical administration. The University of Illinois maintained its order course for the longest period. At approxi-

mately the same time, both Illinois and Chicago moved from opposite ends of the acquisitions education spectrum and began teaching acquisitions as part of courses on technical services. Courses on publishing, which are an integral part of acquisitions education, were taught in most schools only sporadically. Among these prominent schools, no courses devoted solely to acquisitions are presently taught.

TEXTBOOKS

The development of textbooks and training tools for order work paralleled the rise and fall of interest in acquisitions within library education programs. Since much of the early acquisitions education was done by demonstration and visits to publishing houses, there were no textbooks per se. Dewey's *Library Notes* was the first example of a unified approach to teaching any library science topic, and the first issues of this circular included basic discussions of accessioning and book-buying.³⁰ Curricula for early classes were developed year by year within each school, and were exchanged among instructors at such meetings as the ALA Annual Conference of 1885 at Lake George and the Milwaukee Conference of 1886.³¹ In 1908, the Committee on Library Training met and approved the publication of the *A.L.A. Manual of Library Economy*, which was issued chapter by chapter from 1911 through 1929.³² This text included a chapter entitled "Order and Accession Department," by F. F. Hopper,³³ and was later revised in 1930 by Carl Cannon.³⁴ Cannon's text became one of the few important textbooks addressing acquisitions work, and included training in importation of books, copyright, serial subscriptions, accessioning, gifts and exchanges, second-hand buying, and the design of order slips.

In the same year, 1930, Francis Drury produced *Order Work for Libraries*, published by the American Library Association under the guidance of its editorial committee and the University of Chicago's Curriculum Study Committee.³⁵ Drury's text, like other texts of the period, was extremely detailed, and set out to teach the student "to learn fundamental routines for acquiring purchases and gifts; to develop judgement in the various phases of order work . . . to know how to count books at the accession desk . . . to understand the necessary processes in the mechanical preparation of books . . . [and] . . . to distinguish the essentials in statistics and reports."³⁶

The Cannon and Drury works were key texts in acquisitions training for many years. Later training material for acquisitions was relegated to one chapter within a larger topic. In 1937, Columbia University published its syllabus on "Principles of Library Organization and Administration," a detailed course outline that devoted one session to acquisitions.³⁷ Acquisitions was the object of only two chapters in Tauber's *Technical Services in Libraries* text, published in 1954,³⁸ and less than one page in his 1959 syllabus, *Outline for the Course in Current Problems in Technical Services in Libraries*.³⁹ More substantial essays on acquisitions work were published as a result of an institute conducted by the University of Illinois Graduate School of Library Science in 1962.⁴⁰ Almost half of the chapters in *Selection and Acquisitions Procedures in Medium-Sized and Large Libraries* dealt with some aspect of acquisitions work, and portrayed the general educational move away from a prescriptive approach to the topic.

Fifty years after the first texts appeared, the 1969 American Library Association Pre-Conference on Acquisitions prompted the publication of *Melcher on Acquisition* in 1971.⁴¹ Melcher, who presented acquisitions from his experience at the R. R. Bowker Company, offered his personal advice as well as objective experiences to make the acquisitions process more meaningful to the librarian and the library science student. Stephen Ford's *The Acquisition of Library Materials* was published in 1973 by the American Library Association, and was a direct result of a recommendation by the Ad Hoc Committee of the Acquisitions Section of the Resources and Technical Services Division of ALA to produce a current text and reference book on acquisitions.⁴² In many respects, it updates the Drury textbook in both scope and content. Given the diminished interest in acquisitions as an independent course in library schools, it is not surprising that more continuous attention to updating of acquisitions textbooks has not occurred.

PROFESSIONAL CONCERN

When courses in acquisitions, or order work, stopped, it was not as if their passing went unnoticed. In 1938, the *ALA Bulletin* reported the minutes of the Acquisitions Departments of Research Libraries Round Table discussion. One of the first items on the agenda was a discussion of whether there was adequate preparation for acquisitions librarians in library schools. A practicing acquisitions librarian present at this meeting "... expressed the opinion that library schools had failed to provide adequate courses in acquisitions work." A library school instructor noted that "... the curriculum [in acquisitions was] already too full." A medical librarian suggested that librarians needed more symposia.⁴³ No resolution was suggested. At the same ALA conference, Thomas Fleming delivered a paper entitled "Some Unsolved Problems in Acquisitions." He noted, among other things, the profession's failure "to define adequately the function of university acquisition work, and to differentiate clearly the duties which properly belong to an acquisition department." In addition, he stated, "there is a definite need for education of trained personnel. The present courses offered in library schools need revision."⁴⁴

The topic was raised again thirty years later, in a 1966 *Library Journal* opinion piece on acquisitions, subtitled "The Missing Link in the Library School Curriculum?"⁴⁵ Drawing on the opinions of his colleagues, as well as his own experiences in academic librarianship, Royce Butler (an acquisitions librarian himself) made note of the scattered nature of acquisitions education among several specialized classes—book selection, library organization, or technical service courses—and stated that a course on acquisitions "is not only needed, but long overdue. It should be required of all library school students, and the initial required course should be supported by advanced and/or specialized courses."⁴⁶ The author expressed his concern about the source of acquisitions education for most acquisitions librarians, noting that "right now, it is in the technical services departments of libraries, rather than in the library schools, that experiments in acquisitions are being made. . . . I would like to see the library schools doing more on the level of education and scholarship."⁴⁷

One year later, a *Drexel Library Quarterly* "Curriculum" column ad-

dressed the education of librarians for acquisitions and cataloging. The eight-page article devoted one page to acquisitions, citing Butler,⁴⁸ and noting "the most obvious point to be made concerning education for acquisitions is the lack of it. . . . The basic assumption has been that acquisitions is almost exclusively clerical, experience being much more useful than theoretical classroom teaching." The topic has grown so extensively, the author suggested, that the "area deserves at least one separate elective course. . . . [which] . . . can be integrated with book selection and cataloging to which it is closely related."⁴⁹ Any more detailed suggestions about where potential acquisitions librarians should learn their work were not offered. Twenty years later, the same column reviewed the curriculum of book selection.⁵⁰ The authors, Bendix and Pennypacker, reviewed coursework objectives in book selection as developed by the Association of American Library Schools in 1963.⁵¹ Knowledge of the book trade was one stated objective, an understanding of which clearly is useful to the acquisitions librarian. A checklist of twenty-three major topics covered in a materials selection course included two, gifts and order work, falling within this paper's definitions of acquisitions. Of the twenty-seven library schools returning usable surveys, all offered a materials selection course. Twenty-five (92.6 percent) discussed the handling of gifts, and twelve (44.4 percent) discussed order work. Only five schools emphasized order work, meaning that less than 20 percent of library schools devoted one portion of one course to acquisitions work, at least as it related to materials selection.⁵²

The only other contemporary discussion about acquisitions education in the literature appeared in 1978. "Are Library Schools Educating Acquisitions Librarians?: A Discussion"⁵³ provided a forum for four librarians to discuss various aspects of acquisitions education. In the first article, William Myrick presented a semi-serious review of his own experiences and remembrances of acquisitions training in library school. Myrick took an unscientific sample of his technical service colleagues in academic libraries, asking them to recall what they remembered of acquisitions courses in library school, and soliciting opinions about what might be taught. In addition, he polled five library science educators, seeking their responses about what, if anything, was taught about acquisitions in their schools. While not providing scientific data, the two groups' responses did provide Myrick with a list of topics for a library school curriculum, as well as the almost unanimous feeling that acquisitions was not covered to any useful extent in the library school curriculum.⁵⁴

In the second article, Williamson presented a scientific survey of acquisitions training in accredited library schools in North America. In a population of twenty-seven schools, she identified sixty-five specific courses containing some aspect of acquisitions work. She concluded from her survey that the majority of library schools recognize acquisitions as a component of their graduate education, but do not give it any significant standing within the curriculum.⁵⁵

The final articles were more informal. Heitshu⁵⁶ stated that, if asked, a majority of acquisitions librarians would claim their acquisitions education came on the job, as a result of work with vendors and colleagues. She

made note of the University of Michigan intern program, which provides an opportunity for library science students to work in the technical services area of the university library, as well as the coursework available there in collection building. Other continuing education opportunities were noted, such as interaction with American Library Association committees and discussion groups. Serebnick spelled out the kinds of acquisitions topics library schools should consider teaching. She suggested that only by evaluating the work of present and future acquisitions librarians can one decide how well library schools are training students for this position.⁵⁷

CONCLUSION

A review of the history of education for acquisitions work demonstrates a paucity of data about how well acquisitions librarians are educated, and the more fundamental question of how they are educated at all. The progenitor of American library education, Melvil Dewey, noted in 1883 that "As all of literary life is based on books and reading, it is certainly a wise investment to make of the little time needed to acquire so much information on these topics [i.e., book buying] as is practically useful to an educated reader, though he may not attempt to follow out details valuable only to the printer, binder, or publisher."⁵⁸ Yet, Williamson contends that library schools are paying, at most, a nodding acquaintance with the topic, and informal discussion with acquisitions librarians would seem to bear this out.⁵⁹ It would be a specious argument, indeed, to suggest that the library school curriculum return to the past and provide the detailed and intricate training in acquisitions work that once existed. There are useful components in the earlier teaching methods, however, which could be used to enhance formal education for acquisitions.

Of primary importance would seem to be instruction in the publishing and book and serial vending businesses. Publishing is, after all, the "bread and butter" of librarianship, and its output, in book, nonprint, and electronic form, is the basis upon which we catalog and provide reference services and seek to build adequate collections. A fundamental understanding of the economics of publishing, including pricing policies and marketing techniques, is valuable to all librarians, regardless of specialization. Of secondary importance, but still with universal application, are generalized discussions of the business aspects of acquisitions, including accounting techniques, purchasing ethics, and evaluation of the various methods of material procurement, such as approval plans. Libraries are too varied, and the routines of acquisitions too clerical in nature, to emphasize any of the early instruction on order forms or receipt procedures, or any of the myriad detail work that composes the acquisition routine. What is important is to focus on the professional aspects of acquisitions work, and the recognition of acquisitions as an essential component in good library administration.

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Library Research and Writing: A Personal Adventure

Sally Jo Reynolds

A summary of the author's sabbatical leave experiences and reading on library research methods and writing for publication. It describes the techniques of locating and reading library materials, note-taking, and writing. It includes a few basic rules and some avoidable pitfalls the author found through trial and error. Many of the cited works were not written by librarians, although research and writing are part of the daily activities of most librarians.

More than thirty years ago, Jesse Shera asked why few librarians study research questions. He concluded that the problem was not librarians' inability to do research but their focus on case studies that could not be generalized.¹

Since then the authors of several articles have analyzed the relationship between research and the service functions of most library positions; the amount of discretionary time available within the work week; the value of research itself; and the distinction in roles between teaching faculty and librarians. There is no consensus on these issues.² The presence of seminars on research methods in the programs of several recent national conferences³ may indicate a continuing concern with the amount of library research or a continuing belief that librarians will do more research if they are encouraged to build on the skills they already possess.

Librarians analyze and evaluate materials, search for information, and determine the subject content and significance of texts. It may be difficult to broaden these activities into research projects, but the techniques should be applicable to research. This was my assumption when I began a sabbatical project on subject cataloging without first reading about research methods.

A DEFINITION OF RESEARCH

Research has been defined as "being able to frame a significant question,"⁴ or "any systematic quest for knowledge that is characterized by disciplined inquiry."⁵

My problem was that I did not focus on a single question but rather on two of them: Is there a coherent theoretical basis for subject cataloging

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practices? Can subject heading forms be predicted, at least within each major subject field, to increase the success rate of subject searching? I intended to create training materials for both the cataloging and reference departments and I thought that I could combine the two questions into a single project. I should have limited my project once I realized it was really two projects.

THE LITERATURE SEARCH

My sabbatical proposal plan began with a literature search both to gather background information on the topic and to avoid duplicating work already done. Since I was studying an activity directly related to my work that I read about in professional journals, I did not need to acquire an overview from a general article in an encyclopedia or from an introductory textbook. Instead, I began with sources I had cited in the sabbatical proposal and with a search of the library catalog, *Library Literature*,⁶ and the ERIC indexes after identifying the most promising subject terms for each. I also checked the catalog for the works of authors whom I knew to be authorities or prolific writers on subject cataloging.

I should not have begun with the materials in my own library because it does not support a library school. I would have read all of the materials here eventually, but by beginning with older sources I spent too much time on dead or irrelevant issues. I should have begun with the most recent publications and worked backwards to discern intellectual trends,⁷ identify the most influential writings, and concentrate on the current issues.

Before I began, I worried that I would reach a point where I did not know what to do next. This never happened; often I had the opposite problem of having to choose between several possible next steps. There were two ways in which one reading led to another. Often a particular point was cited in a bibliography and led to another published source. At other times the reading raised questions in my mind that I could answer only by exploring other subject fields. In this way I found interesting and relevant information about the theory of knowledge, right versus left brain functions, developments in artificial intelligence, computer authority control, indexing theory, use studies, and research methods.

I used a combination of reading techniques including the search for specific information, skimming, and critical analysis to determine the author's opinion. Adler and Van Doren⁸ describe the techniques for different reading intensities, and they point out that the reader, as an active participant in the reading process, is more like a baseball catcher than a football receiver. A skillful reader uses many of the same clues as a cataloger in assessing the author's intentions. These include the title, preface, table of contents, abstracts or summaries, topic sentences, publisher's blurb, index, and citations.

I continued the literature search until I had read most of the sources cited in bibliographies and until the new readings restated the same information and positions I had already encountered elsewhere.

LOCATING MATERIALS

As a researcher, I suffered from the same frustrations as other library

patrons. Sometimes materials were misshelved, periodical issues were missing, or items were held in special locations known only to librarians. Journal runs were split between printed and microform volumes. I found that my experience as a librarian helped because I knew where materials might be in my own library and I could guess where they were (or ask colleagues) in other libraries.

I viewed browsing with disdain because I thought that patrons used it in place of the catalog. But browsing is a good supplementary approach to the collection. Subject headings are not consistently applied and sometimes related materials can only be identified through the classification. I also found useful articles by checking the table of contents in additional volumes when I had several citations to a serial title.

TAKING NOTES

One major problem in note-taking is recognizing significant points, especially at the beginning before the topic takes shape. I decided that it was better to take too many notes than to need additional information later from sources I already had consulted.

I could have kept complete and accurate notes by copying everything, but I preferred to use the copy machine sparingly. Taking notes longhand forced me to winnow out everything that was not relevant and helped me to fix the points in my mind. Copied articles contain large amounts of extraneous type and they are organized according to the author's thesis and not the reader's research topic. On the other hand, for long quotes, multiple copies, and interlibrary loan, copying is indispensable.

Williams defines the types of notes as *précis* (a summary in one's own words); paraphrase (one's own words but roughly equal in length to the original); summary or synopsis; quote (which he recommends if one is not certain how it will be used later); and critical or evaluative notes.

I tried to take careful notes and complete citations since nothing is more annoying than to have to track down a citation, especially if it involves a trip across town, because it was not accurately and completely transcribed in the first place. I also wanted to be certain to give credit to other authors if I used their ideas or research. The one dilemma I never resolved was whether to take credit for an idea or opinion I held before I read it in another author's work. Probably, the only safe way to handle this situation is with a footnote that states the article confirmed my previous opinion.

ORIGINAL SOURCES

The literature search enabled me only to combine and paraphrase the opinions and research of others. In order to reach my own insights and conclusions, I needed to consult original documents. This was the next step of the project.

I reviewed documents, manuals, and reports on subject cataloging from national agencies and other libraries and I compiled lists of examples of each form of the Library of Congress subject heading in twenty-three major subject fields. Many of the articles I read used local practices as a case study for general application. I was using the same technique in trying to determine general policies from specific practices, but I was trying to ap-

ply national policies to the local situation.

Although I did not completely disprove my original hypotheses, I found a wider gap between theory and practice and a weaker pattern of predictable forms of subject headings within each subject field than I had expected to find. This forced me to reorganize the project according to the points that supported the new conclusions I reached.

ORGANIZING NOTES

As I organized my notes, I practiced the subject cataloging techniques I read about by defining terms, trying to apply them consistently, and breaking topics into subtopics when I had too many notes under a single heading. I developed a table of contents with cross-references to avoid putting related information under separate headings.

I made an outline at the beginning and revised it regularly to eliminate points that no longer seemed important and to help organize the notes. But when the second stage of the research forced me to rethink the entire outline, the notes were not organized under the new topic headings. Furthermore, I had many more notes than I could summarize.

I extracted all of the rules, examples, and practical instructions, and inserted them in local cataloging documents. Since there were still too many notes, I tried several different approaches. First I tried to cross-index them under major topics, but this required a double look-up and constant reshuffling. I read through them and highlighted significant points, but this did not organize them and it required too much rereading to find pertinent information. Finally, I sorted the notes into piles by major heading, and I inserted additional points later as I discovered them under other headings.

One problem was that I took the notes on sheets of filler paper because I recognized that note cards would not provide enough space. But I used both sides of the paper and some sheets fit under more than one heading.

In retrospect, I should have eliminated many of the notes taken at the beginning, even though it was tangible evidence of wasted work. Then I should have moved the notes under new topical headings even if I had to copy some of them in order to put them in two places.

WRITING

Summarizing my findings in written form was the most difficult part of the entire project. In part this was because of the mass of poorly organized notes. "Even if you could present all the facts the miserable things wouldn't say anything."¹⁰ But the difficulty also was due to the difference between what I expected to find and what I found and to a natural inertia when faced with a blank word processing screen.

Normally I write from an outline and proceed from the beginning to the end, even though the beginning is critical because it must establish the basis for all that follows and grab the reader's attention. This time I found it easier to begin with a section for which I had a pile of notes no matter where it fit into the report. Once I got started, it was easy to keep going, although I often discarded the first two pages of the day. I wrote the beginning, conclusion, and transition sentences last.

Each type of writing follows its own formula. Research reports gener-

ally include a discussion of the reason for the research, including the theoretical background and any previous studies, a statement of the research question, any hypotheses that were tested, the procedures and methods employed, the facts or data assembled and their interpretation, and the conclusions.¹¹ The research question and its importance must be clear to the reader and the discussion must be directed to those who know enough about the topic to grasp the argument but not so much that they learn nothing new from the research.¹²

REWRITING

The initial draft of a report merely translates ideas into words. It takes a surprising amount of time to revise, rewrite, reorganize, prune, and proof the report. Usually a writer does this more than once, testing each sentence to determine whether it is grammatically correct and whether it contributes to the logical progression of the author's thought. Each paragraph should focus on a topic and be constructed as carefully as the entire paper. Since I put the notes for each section together and wrote each section separately, when I put the entire report together I moved paragraphs and whole sections back and forth several times.

The English language permits the same thing to be said in many ways and it is difficult to find the best words. Often I mentally composed sections of a report that I could not remember at the terminal. I sometimes consulted a dictionary or thesaurus for precision and variety, but in general I believe that the first word that occurs to me will best suit my writing style.

Several style manuals and research handbooks include writing tips.¹³ From experience I know that I use too many words, especially unnecessary modifiers, and too many passive verbs. (For example, the preceding sentence originally read: From experience I know that the major faults in my writing are too many words, especially unnecessary modifiers, and overuse of the passive voice). Whenever I draft a report I read it one extra time to find examples of these tendencies. The change to active from passive voice often shortens a sentence, but I have difficulty spotting unnecessary modifiers, probably because they are common in everyday American discourse.¹⁴

"Almost any manuscript will be strengthened by being cut."¹⁵ However, all of the rules, from writing according to a formula to being as succinct as possible, can be carried too far. "Rumor has it that a popular novelist, asked by a beginner how to write a detective story, advised combining a glimmering of religion, a touch of class, a soupçon of sex, and a strong aura of mystery. The resulting story ran as follows: 'My God,' said the Duchess, 'I'm pregnant. Who done it?'"¹⁶

I was not satisfied with the final version of my report, and, perhaps, I never would have been. Different wording and additional points occurred to me even after I had submitted it. But with my sabbatical leave running out, I had to limit the revision time.

CITATIONS

Although I knew better, I began to compile my references on sheets of paper rather than on cards, one citation per card, and I had to transfer

them. I tried to be accurate and complete, but I caught some mistakes and I had to go back to another library to complete three of the citations.

After debating about how to organize the final bibliography, I decided to make separate sections for each form of publication (monographs, handbooks and reports, periodical articles, etc.) rather than a single alphabetical list. This worked particularly well for conference proceedings and books of readings that I listed individually with a subordinate list of the parts I had read, arranged alphabetically.

There are many acceptable forms for citations. I looked at several journals and each had a form that differed at least slightly from all of the others. None resembled the form familiar to catalogers. Once I decided to submit an article for publication, I followed the form used in the journal I had selected.

As a final check, I compared the footnotes to the citations to be certain that names were spelled correctly and that the points I cited were attributed to the right authors. I also checked all of the quotes against my notes to be certain that I had transcribed them correctly. This final proofing was tedious, but I did not want to offend the writers I cited or to provide an opportunity for a critic to invalidate my conclusions because of presumed carelessness.

CONCLUSION

I still believe that the work experience of most librarians is a good background for scholarly research. But I do not believe that it is, by itself, sufficient preparation. When I undertake another research project I will take time to read about research techniques ahead of time. Because I waited until I was midway through the project to read research manuals, I did not plan systematically or organize the project efficiently.

I now have a more realistic idea about the time required for each step in the research process. I believe that it is especially important to allow time to write a report so that others can benefit from research findings and conclusions.

I am glad that I allowed my curiosity to lead me into side issues, but I should have focused more clearly on a single question and been certain that the side issues were related to it. I was right to be flexible about revising my hypothesis and my outline as I learned more about the topic, but I should have been equally flexible about eliminating notes that were no longer relevant.

The folk saying that "experience is the best teacher" presumes that we learn primarily from our own rather than from others' experiences. However, I hope that future librarian researchers will disprove this by profiting from my experience and avoiding my mistakes.

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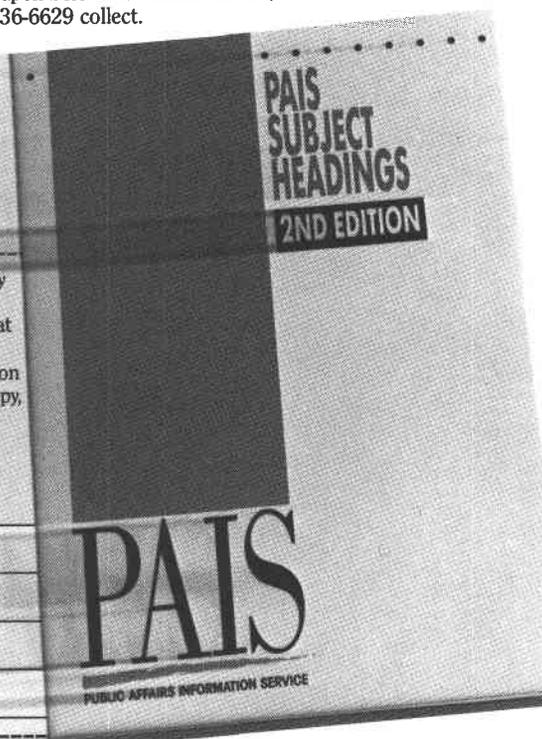
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Analysis of a Bibliographic Database Enhanced with a Library Classification

Karen Markey Drabenstott, Anh N. Demeyer,
Jeffrey Gerckens, and Daryl T. Poe

In the Dewey Decimal Classification (DDC) Online Project, the DDC was studied as a searcher's tool for subject access, browsing, and display in an experimental online catalog. Subject terms from the DDC Relative Index and Schedules were added to bibliographic records and indexed in the catalog. Enhanced with the DDC, the experimental online catalog offered users additional subject searching strategies not feasible through the alphabetical approaches of subject headings and keywords of existing online catalogs. This paper describes how bibliographic records were enhanced with subject terms from the DDC. Results show that the DDC was a major contributor of unique, general subject terms to bibliographic databases. Incorporated in online catalogs, the DDC, and possibly other library classifications, can enhance subject access and provide additional subject searching strategies to system users.

ENHANCING SUBJECT ACCESS TO BIBLIOGRAPHIC DATABASES

The importance of incorporating a classification scheme into the information retrieval environment of an online catalog lies in its potential for introducing a logical approach to subject searching and increasing the amount of subject information contained in subject indexes and detailed in bibliographic records. The latter point is the focus of this paper.

Increasing the amount of subject information in bibliographic records and indexes to those records was studied in the Subject Access Project (SAP).¹ Concerned with the dearth of subject information in bibliographic

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records, SAP investigators added subjects from the tables of contents and indexes of books. They concluded that online searching of enhanced bibliographic records provided greater access to books with relevant information, greater precision, was less costly, and answered some queries that were impossible to answer through keyword searching without the enhancement. A related research project conducted at Lund University Library led to the development of a bibliographic database for the Swedish government in which records were enhanced with subject terms from tables of contents, indexes, figures, and table captions.² A review of subject enhancement efforts described additional "SAP-like" research projects and one commercial database (Superindex) with indexing approaches similar to SAP.³ Staff at two libraries—the Australian Defense Force Academy and the Engineering Library of Purdue University—regularly enhance bibliographic records using the SAP approach; however, data entry of the enhancement is done manually.^{4,5} Another review of subject enhancement efforts emphasized that the data needed for such enhancement were not readily available in machine-readable form.⁶

The DDC Online Project provided the opportunity to study the enhancement of a bibliographic database with subject terms from a library classification. The machine-readable DDC used in the DDC Online Project was converted from print tapes, which originally served to produce the 19th edition of the printed *DDC* using computerized photocomposition. Subject terms from the machine-readable DDC Schedules and Relative Index were automatically assigned to bibliographic records by the computer when the class number of a bibliographic record matched the class number associated with a Schedule caption and/or Relative Index entry. Thus, enhancement of bibliographic records was a computerized procedure and manual data entry was not necessary.

BACKGROUND OF THE DDC ONLINE PROJECT

The DDC Online Project was supported by the Council on Library Resources, OCLC Online Computer Library Center, Inc., and Forest Press (DDC publisher) from 1983 to 1986. The project team developed an experimental online catalog for searching by library patrons and staff in retrieval experiments. Between 8,000 and 12,000 bibliographic records were obtained from four participating libraries—Library of Congress (LC), New York State Library (NYSL), Public Library of Columbus and Franklin County (PLCFC), and the Mathematics Library of the University of Illinois at Urbana-Champaign (UI)—and processed into four separate databases in the experimental online catalog. Forest Press provided the DDC Online Project team with machine-readable DDC Schedule and Relative Index records in the four subject areas chosen by the four participating libraries, i.e., economics and management (LC), New York State history and geography (NYSL), recreation and sports (PLCFC), and mathematics (UI).

Four features of the DDC were employed to help searchers browse for and match their own subject terms with the catalog's terminology: (1) subject terms in Schedule captions and notes, (2) hierarchical arrays of related terms in the Schedules, (3) subject terms in the Relative Index, and (4)

class numbers in both Schedules and Index. The project team designed and developed new approaches to subject searching and browsing that were unique to online catalog development. Through the subject information from the DDC and additional searching approaches, searchers of the experimental online catalog had greater chances of finding exactly the topics they were seeking.

The effectiveness of the DDC in an online catalog was tested in retrieval experiments with library patrons and staff at the four participating libraries. Results of the tests determined that the online DDC improved the search performance of subject searchers at the online catalog.⁷

This paper describes how the four bibliographic databases of the experimental online catalog were built from subject information in the DDC Schedules and Relative Index and from four participating libraries' bibliographic records. The databases were then analyzed to determine the extent of subject enhancement by the DDC Schedules and Relative Index. Results of the database analysis demonstrated that the DDC was a major contributor of unique, general subject terms to bibliographic databases.

MACHINE-READABLE SCHEDULE RECORDS

Three DDC Schedule records are shown in a machine-readable format in figure 1. Each record contains a variable number of fields, each preceded by a two- or three-letter tag.

Although there were thirty-five different fields in Schedule records, only six fields were added to the experimental online catalog because they

```
isq840313103322962
rno70229500
me796.5
metOutdoor life
srfSchedule-Full Ed.
//
```

```
isq840313103322970
rno70229600
me796.51
metWalking
nch@rClass here backpacking
ncr@xFor walking in specific kinds of terrain, see 796.52
srfSchedule-Full Ed.
//
```

```
isq840313103322987
rno70229700
me796.52
metWalking and exploring in various specific kinds of terrain
srfSchedule-Full Ed.
//
```

Figure 1. DDC Schedule Records in a Machine-Readable Format

contained subject terms that described the subject matter of books assigned the particular class number:

1. Schedule class number
2. Schedule caption
3. Example notes
4. Including notes
5. Class here notes
6. General notes

When the class number in bibliographic records matched the class number in Schedule records, the Schedule caption and example including class here and general notes were added to bibliographic records. Schedule captions were shown in bibliographic record displays; Schedule notes were not shown because they described the subject matter of books that were classed in an area but not necessarily the contents of any one book.

Only valid captions in the 19th edition of the *DDC* were used in the project. *DDC* captions in brackets (i.e., the captions that were not in use, not recommended for use, or no longer used in the 19th edition of the *DDC* Schedules) were not used for indexing and/or display in the experimental online catalog.

The project team devised a means to generate lists of *DDC* class numbers and captions on the same level of the *DDC* hierarchy automatically. The team could not just truncate the last digit of a valid class number and expect that the result would be a valid class number. Therefore, dummy *DDC* class numbers with trailing zeros and the caption "General aspects. Examples: Journals, study and teaching" were added to the Schedules in the experimental online catalog. For example, the dummy class number 796.3320 was added to the database with the caption "General aspects. Examples: Journals, study and teaching" to enable a user to proceed down the *DDC* hierarchy, display the class number and caption, and retrieve bibliographic records with the class number.

Several Schedule terms were easily understood by classifiers but not by patron searchers. Such terms were replaced with understandable common words. The phrase "Class here" in class here notes was replaced with the word "Also." The wording of the caption "Standard subdivisions" was changed to the following:

<i>Last Digit</i>	<i>Caption</i>
1	Philosophy and theory
2	Miscellany
3	Dictionaries and encyclopedias
4	(not found)
5	Serial publications
6	Organizations and management
7	Study and teaching
8	With respect to groups of persons
9	From a historical and geographical viewpoint

Without this change, system users would have been directed to outlines of *DDC* Schedule captions solely composed of the phrase "Standard subdivisions."

The number of Schedule records received from Forest Press was equal

TABLE 1
DDC AND BIBLIOGRAPHIC RECORDS

	LC	NYSL	PLCFC	UI
No. Schedule records received	1,171	179	529	282
No. Schedule records added to catalog	1,714	183	725	287
No. Relative Index entry records received	2,162	228	1,345	753
No. Relative Index entry records added to catalog	1,956	228	1,014	706
No. bibliographic records received and added to catalog	11,865	8,144	9,719	7,603

to or greater than the number of Schedule records processed into the experimental online catalog because Schedule records containing ranges were expanded into individual Schedule records, and dummy Schedule records with trailing zeros were specially created to enable users to proceed down the DDC hierarchy (see table 1).

MACHINE-READABLE RELATIVE INDEX RECORDS

Examples of machine-readable Relative Index records are shown in figure 2. All fields except the index sequential number (isq), record number (rno), and the edition indicator (irf) were accessible to experimental online catalog searchers because these fields contained subject terms.

When processing entries, main Relative Index entries (field ixa) were concatenated to secondary entries (field ixb) and separated by two hy-

```

isq8404130203209306
rno510930
ixaOutdoor
ixblife
ixcsports
ixn796.5
irfIndex-Full Ed.
//

isq840413024374617
rno807461
ixaWalking (sports)
ixbrecreation
ixn796.51
irfIndex-Full Ed.
//

isq840413014917438
rno401743
ixaHikers
ixbbiog. & work
ixn796.510 92
irfIndex-Full Ed.
//

```

Figure 2. DDC Relative Index Records in a Machine-Readable Format

phens. Secondary entries were concatenated to other secondary entries and separated by two hyphens. Thus, the first listed Relative Index entry in figure 2 became "Outdoor--life--sports."

When the class number in bibliographic records matched the class number connected with Relative Index entries, the entries were added to bibliographic records. Entries were not displayed in bibliographic records because they described the subject matter of books that might be classed in an area but did not necessarily describe the contents of any one book.

Class numbers connected with Relative Index entries were also links to the Schedules. In the experimental online catalog, searchers selected entries to browse displays of Schedule captions and class numbers. When entries were not connected with Schedule class numbers, they were not processed into the catalog.

Abbreviations were completely spelled out. When abbreviations could be replaced by only one word or phrase, the replacement was done automatically by the computer; other abbreviations were manually reviewed by an editor to determine the correct form.

The number of Relative Index records received from Forest Press was equal to or less than the number of such records processed into the experimental online catalog because entries connected with class numbers that did not match Schedule class numbers were eliminated, and entries connected with class numbers that did not match a class number in libraries' bibliographic records were eliminated (see table 1).

MACHINE-READABLE BIBLIOGRAPHIC RECORDS

Table 1 lists the number of bibliographic records received from each of the four participating libraries and processed into the experimental online catalog. Fields indexed in the experimental online catalog were limited to subject fields, i.e., class numbers (tags 082, 092), titles (tags 130, 24x, 730, 740), subject headings (tags 6xx), series (tags 4xx), and contents (tags 505, 520), because the project team was studying subject searching. These same fields were displayed in bibliographic records. Other display fields were for authors (tags 100, 110, 700, 710), sponsors (tags 111, 711), edition (tag 250), and publisher (tag 260) and helped searchers find retrieved items on the library bookshelves.

Fields specially constructed from the DDC and added to bibliographic records were Schedule captions, selected Schedule notes, and Relative Index entries. Only Schedule captions were displayed in bibliographic records.

Two Schedule captions were added to each bibliographic record. The first caption was taken from the best match of the class number in the bibliographic record with a Schedules class number. The second caption was taken from the next highest level of the Schedules because it often provided context for the first caption that came from a more specific Schedule level. For example, the best match of the synthesized class number 796.5405 in a bibliographic record was the Schedules class number 796.54. This record was enhanced with the caption "Camping" found at 796.54 in the Schedules, and with the caption "Outdoor life" found at 796.5 in the Schedules. If the Schedules class number was only three digits long, only the first cap-

tion was added to the bibliographic record because captions at this level were usually indicative of the subject matter of library material.

FIELDS IN ENHANCED BIBLIOGRAPHIC RECORDS

In table 2, bibliographic record fields selected for indexing and display in the experimental online catalog are listed along with the total number of fields in each library's database, average number of fields per bibliographic record, and the percentage of records without these fields in the database.

The average number of subject headings per bibliographic record was 2.26 in Library of Congress (LC) records. These records were cataloged by LC in late 1983 and the average number per record was comparable to the average of 2.289 reported in a study of LC records cataloged in 1974.⁸ The average number of subject headings per bibliographic record in the New York State Library, Public Library of Columbus and Franklin County, and University of Illinois databases ranged from 1.14 to 1.46. The average number of subject headings per bibliographic record in the databases of these three libraries was comparable to the 1.3 average headings reported in four separate studies.^{9,10,11,12}

The NYSL database had the largest percentage of records (35.98%) without subject headings. Disregarding NYSL records without subject headings, the remaining records had an average of 1.8 subject headings per record. When Schedule captions were added to NYSL records without subject headings, they often provided context to help users determine what the book was about. For example, the subject of an item entitled *Queen of the Lakes* would not have been readily apparent without the inclusion of the Dewey subject field.

DEWEY NUMBER	917.4797 L71
TITLE	Queen of the Lakes.
DEWEY SUBJECT	Geography of and travel in Western counties. Geography of and travel in Buffalo.
AUTHOR	Lidstone, James Torrington Spencer.
PUBLISHED	1952

About 20% of LC records and 23% of PLCFC records were not enhanced by Relative Index entries. This meant that they were not retrievable by selecting a Relative Index entry in an alphabetical search and asking for a display of bibliographic records. Only 1.34% of UI records were not enhanced with Relative Index entries and could not be so accessed.

All records in the four libraries' databases were enhanced with Schedule captions. Approximately three-quarters of LC and UI records contained notes from the DDC Schedules. Almost all bibliographic records had call number, author, title, and publisher fields. Some had edition, series, and/or sponsor fields.

FIELDS IN SCHEDULE RECORDS

Experimental online catalog searchers accessed Schedule records when searching and browsing the classification through three subject searching capabilities. The Schedule record shown in figure 3 for class number

TABLE 2
 NUMBERS AND PERCENTAGES OF FIELDS IN ENHANCED
 BIBLIOGRAPHIC RECORDS

Field	Library of Congress Field Counts			New York State Library Field Counts		
	Total	Average per Record	Without Field % in Database	Total	Average per Record	Without Field % in Database
DDC Relative Index						
Entry	24,288	2.05	20.48	12,079	1.48	11.70
DDC Caption	11,865	1.00	0.00	8,144	1.00	0.00
DDC Notes	16,952	1.43	27.70	2,690	0.33	70.38
LC Subject	26,827	2.26	0.04	9,322	1.14	35.98
Edition	1,143	0.10	90.37	126	0.02	98.45
DDC Call Number	11,865	1.00	0.00	8,144	1.00	0.00
Author	16,704	1.41	8.82	7,365	0.90	22.08
Sponsor	422	0.04	96.47	2,354	0.29	76.61
Alternate Title	247	0.02	97.96	25	0.00	99.72
Title	11,865	1.00	0.00	8,144	1.00	0.00
Publisher	11,865	1.00	0.00	7,895	0.97	3.06
Series Title	0	0.00	100.00	7	0.00	99.91
Contents	3,919	0.33	68.23	113	0.01	98.67
Genre	410	0.03	96.54	47	0.01	99.44
Subheading	0	0.00	100.00	0	0.00	100.00
Title Added	102	0.01	99.23	NA	NA	NA
Series Added	1,702	0.14	87.75	128	0.02	98.53
DDC Class Number	1,530	0.13	87.43	3	0.00	99.96
LC Call Number	81,479	6.87	0.00	29,320	3.60	98.45
Collection	11,865	1.00	0.00	NA	NA	NA
	NA	NA	NA	9,414	1.10	0.00
Number of bib. records = 11,865				Number of bib. records = 8,144		
Number of fields = 235,050				Number of fields = 105,320		

658.3145 was composed of Schedule class number, caption and note fields, Relative Index entries, and first-listed subject headings in bibliographic records. When browsing the Schedules online, searchers could select a caption to obtain Schedule records that bore all of the information shown in figure 3 except first-listed subject headings.

Table 3 contains summary statistics for Schedule records including the average number of elements per Schedule record. For example, there were a total of 9,292 unique, first-listed subject headings in the LC database linked to a total of 1,714 unique DDC class numbers. The average number of unique subject headings linked to unique class numbers in this database was 5.4. The range of unique subject headings linked to one class number ranged from a low of 0 to a high of 440. The class number linked to this high of 440 subject headings was 338.47 (Goods and services).

The average number of unique, first-listed subject headings per class number was not one; thus, no one-to-one correspondence between first-listed subject headings in bibliographic records and DDC class numbers existed. When large numbers of unique subject headings were linked to class number, they affected the performance of the subject outline search in the experimental online catalog adversely because they guided searchers to a bookshelf location where users had to browse library material on many subjects to find the one subject that interested them.

TABLE 2
(CONTINUED)

Field	Public Library of Columbus and Franklin County Field Counts			University of Illinois Field Counts		
	Total	Average per Record	Without Field % in Database	Total	Average per Record	Without Field % in Database
DDC Relative Index						
Entry	14,663	1.51	23.27	25,444	3.48	1.34
DDC Caption	9,719	1.00	0.00	7,316	1.00	0.00
DDC Notes	3,844	0.40	62.13	8,692	1.19	22.12
LC Subject	13,720	1.41	2.76	10,656	1.46	0.70
Edition	2,232	0.23	77.03	1,027	0.14	85.96
DDC Call Number	9,719	1.00	0.00	7,316	1.00	0.00
Author	12,416	1.28	1.18	9,609	1.31	2.36
Sponsor	0	0.00	100.00	279	0.04	96.25
Alternate Title	212	0.02	97.84	219	0.03	97.06
Title	9,719	1.00	0.00	7,316	1.00	0.00
Publisher	9,719	1.00	0.00	7,316	1.00	0.00
Series Title	2	0.00	99.98	0	0.00	100.00
Series	197	0.02	98.02	2,654	0.36	64.80
Contents	201	0.02	97.93	357	0.05	95.17
Genre	0	0.00	100.00	0	0.00	100.00
Subheading	156	0.02	99.17	191	0.03	98.93
Title Added	696	0.07	93.28	320	0.04	96.10
Series Added	7	0.00	99.94	548	0.07	92.77
DDC Class Number	34,760	3.58	0.00	16,269	2.22	0.00
LC Call Number	NA	NA	NA	NA	NA	NA
Collection	NA	NA	NA	NA	NA	NA
Number of bib. records = 9,719				Number of bib. records = 7,316		
Number of fields = 121,982				Number of fields = 105,529		

The average number of Relative Index entries per unique DDC class number varied from library to library depending on the assignment of classification numbers in each library. At UI, the average number of Relative Index entries was 2.21, which surpassed the average number of such en-

Schedules

class number: 658.3145

Schedule captions: Motivation, morale, discipline (from 658.314)
Interpersonal relations (from 658.3145)Including note: Including informal, day-to-day relations
between supervisors and subordinatesGeneral note: Promotion of effective working relationships
between individuals and groupsRI entries: Interpersonal relations—employees—personnel
administration—general management

First-listed headings: Conflict management

Executives

Interpersonal relations—Study and teaching—
Management

Sexual harassment

Figure 3. Schedule Record for 658.3145

TABLE 3
AVERAGE NUMBER OF FIELDS PER SCHEDULE RECORD

	Unique Class Numbers and DDC Schedule Captions	First-listed LC Subject Headings	DDC Relative Index Entries	nin	nex	nch	not	Total Subject-rich Note Fields
<i>LC</i>								
Total	1,714	9,292	1,710	178	49	103	235	565
Average	1.0	5.4	1.0	0.10	0.03	0.06	0.14	0.33
Range	1	0-440a	0-16b	0-1	0-1	0-1	0-1	0-1
<i>NYSL</i>								
Total	183	3,024	228	5	0	28	1	34
Average	1.0	16.5	1.25	0.02	0	0.15	0.006	0.19
Range	1	0-236c	0-7d	0-1	0	0-1	0-1	0-1
<i>PLCFC</i>								
Total	725	3,438	646	34	30	10	32	106
Average	1.0	4.7	0.89	0.05	0.07	0.01	0.04	0.15
Range	1	0-254e	0-13f	0-1	0-1	0-1	0-1	0-1
<i>UI</i>								
Total	287	2,174	635	30	27	28	0	85
Average	1.0	7.6	2.21	0.10	0.09	0.10	0	0.30
Range	1	0-408g	0-21h	0-1	0-1	0-0	0	0-1

a (338.47) Goods and services

b (338.2) Extraction of minerals

c (974.7) History of New York

d (917.4753) History of Essex County;

(974.753) Geography of and travel in Essex County

e (791.4309) Standard subdivisions (Motion pictures)

f (794.2) Other board games

g (510) Mathematics

h (512.55) Topological and related algebras

Key: nin = Including note

nex = Example note

nch = Class here note

not = General note

tries at the three other libraries. The average number of Relative Index entries per unique DDC class number at PLCFC was 0.89, because PLCFC classifiers assigned general class numbers to items on specific subjects, even though there was a specific class number to represent the item's subject, and did not use specific numbers in the Schedules. Since these numbers were not used by the library, Relative Index entries with these numbers were not processed into the catalog because they would have been blind references in online subject searches.

Schedule captions and notes were processed into the experimental online catalog regardless of the number of bibliographic records posted to class numbers. The percentages of Schedule captions that resulted in no retrieved items were 39% at LC, 9% at NYSL, 49% at PLCFC, and 22% at UI.

There was one Schedule caption per unique class number; thus, the average number of Schedule captions per class number was one in each of the four databases. The average number of Schedule notes per DDC class

number varied from library to library. LC and UI databases had the most including notes. Example notes were most plentiful in the UI database. Schedule captions in the NYSL database featured more class here notes than the databases of the three other libraries. General notes were most plentiful in the LC database. When subject searchers displayed Schedule notes, they were disappointed that there were so few notes and called for more.

LINKS BETWEEN THE RELATIVE INDEX AND SCHEDULES

The percentages of DDC class numbers in the 19th edition of the *DDC* without Relative Index entries ranged from 51.3% to 11.5% in the subject areas chosen by PLCFC and NYSL, respectively. These percentages were determined *before* the DDC was processed into the experimental online catalog, and thus, were not dependent on database postings.

Not every Relative Index entry in the 19th edition of the *DDC* was represented by a class number and caption in the Schedules. The percentages varied among the four libraries' databases from 29.9% at PLCFC to zero at NYSL. (These percentages were obtained *after* entries were processed; thus, entries that directed searchers to class numbers with zero postings had already been discarded from the catalog.)

Every class number in the ranges selected by NYSL was represented by at least one Relative Index entry. Only entries for the range 973.1-973.2 were taken directly from the Relative Index. Entries for the ranges 917.47-917.4799 and 974.7-974.799 were specially created by adding a 91 and a 9 to Relative Index entries with the "area-" designation and class numbers beginning with 747. The phrase "Geography of and travel" was inserted after the text of an entry beginning with 917.47 and "History" was inserted after the text of an entry beginning with 974.7.

CONTRIBUTIONS OF UNIQUE TERMS BY SUBJECT-RICH FIELDS IN ENHANCED BIBLIOGRAPHIC RECORDS

Fields containing subject terms in bibliographic records were analyzed to determine the average number of unique words contributed *successively* by these fields. Such fields were subject headings (tags 6xx), titles (tags 130, 24x, 730, 740), bibliographic record notes (tags 505, 520), series (tags 4xx), sponsor (tags 111, 711), Relative Index entries, and Schedule captions and notes.

The analysis required the calculation of the number of words per field. These words were then compared with one another, and duplicate words per field were discarded. Finally, the number of unique words contributed *successively* by each field was calculated. The results of the analysis when subject heading fields were first in the analysis and Schedule caption and note fields were last are given in table 4.

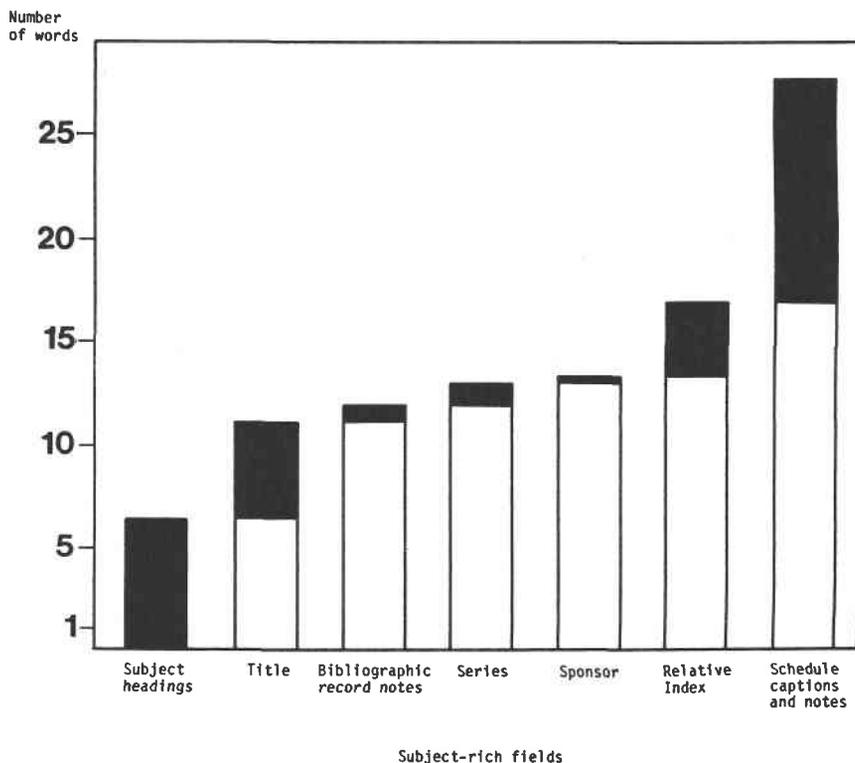
For LC records, subject headings contributed an average of 6.23 unique words, and title fields contributed an average of 5.08 unique words. Bibliographic record notes, series, and sponsor fields contributed a total of 2.17 unique words. Relative Index entries contributed 4.23 unique words and Schedule captions and notes contributed 10.19 unique words. Even

TABLE 4
 SUCCESSIVE CONTRIBUTIONS OF UNIQUE TERMS IN FIELDS OF BIBLIOGRAPHIC RECORDS

	Subject Headings	Title	(Bibliographic Record) Notes	Series	Sponsor	Relative Index Entries	Schedule Captions and Notes	Total
<i>LC</i>								
Total unique words	73,925	60,234	8,342	16,300	1,109	50,244	120,889	331,043
Average	6.23	5.08	0.70	1.38	0.09	4.23	10.19	27.90
Percentage of total	22%	18%	3%	5%	0.0%	15%	37%	100%
<i>NYSL</i>								
Total unique words	28,021	54,095	429	392	4,924	25,806	25,258	138,925
Average	3.44	6.64	0.05	0.05	0.61	3.17	3.10	17.06
Percentage of total	20%	39%	0.0%	0.0%	4%	19%	18%	100%
<i>PLCF</i>								
Total unique words	30,225	31,279	2,778	512	0	21,768	42,978	129,540
Average	3.11	3.22	0.29	0.05	0	2.24	4.42	13.33
Percentage of total	24%	24%	2%	0.0%	0	17%	33%	100%
<i>UI</i>								
Total unique words	21,750	36,353	4,118	10,509	600	29,594	22,633	125,557
Average	2.97	4.97	0.56	1.44	0.08	4.05	3.09	17.16
Percentage of total	17%	29%	3%	8%	0.5%	24%	18%	100%
Grand total of unique words	153,921	181,961	15,667	27,713	6,633	127,412	211,758	725,065
Average	4.15	4.91	0.42	0.75	0.18	3.44	5.72	19.57
Percentage of grand total	21%	25%	2%	4%	1%	18%	29%	100%

though the Schedules contributed last in the sequence, they contributed more unique terms than subject headings in LC records. The bar graph in figure 4 shows the successive contributions of unique words in subject fields of the LC database. At least one-third of unique subject terms in LC and PLCFC records were contributed by Schedule captions and notes. Over one-third were contributed by the Relative Index and Schedule captions and notes in all four participating libraries' records.

The sequence of fields was reversed. The analysis was repeated and results are given in table 5. Subject headings contained 13% or less of the total percentage of unique subject terms in bibliographic records. The greatest contribution came from the Schedules, which gave between 40% and 49% of unique subject terms. The bar graph in figure 5 shows the successive contributions of unique words in subject fields of the LC database. The DDC contributed 58% of unique subject terms. Although title fields were next-to-last contributors of unique terms, they contributed 21% of such terms.

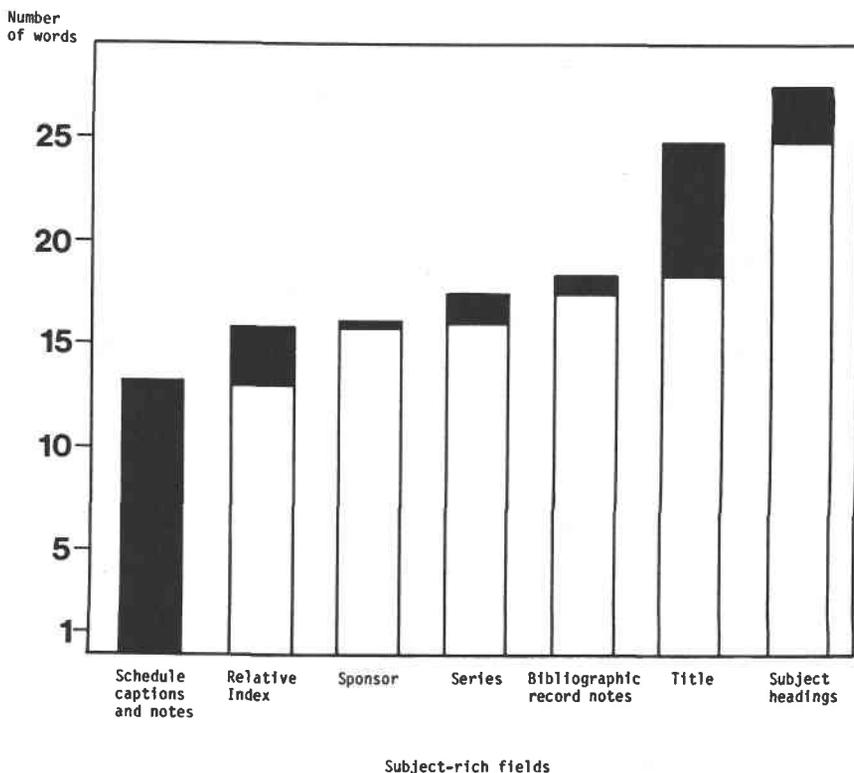


NOTE: Darkened portion of bar represents the number of unique words contributed by this field. White portion of bar represents number of unique words already contributed by fields listed to the left of the bar.

Figure 4. Successive Contributions of Unique Subject Terms by Subject Fields in Bibliographic Records

TABLE 5
SUCCESSIVE CONTRIBUTIONS OF UNIQUE TERMS IN FIELDS OF BIBLIOGRAPHIC RECORDS (REVERSED)

	Schedule Captions and Notes	Relative Index Entries	Sponsor	Series	(Bibliographic Record) Notes	Title	Subject Headings	Total
<i>LC</i>								
Total unique words	161,082	28,484	2,893	17,940	8,860	68,331	43,453	331,043
Average	13.58	2.4	0.24	1.51	0.75	5.76	3.66	27.90
Percentage of total	49%	8%	1%	5%	3%	21%	13%	100%
<i>NYSL</i>								
Total unique words	55,851	12,457	7,677	408	479	50,723	11,330	138,925
Average	6.86	1.53	0.94	0.05	0.06	6.23	1.39	17.06
Percentage of total	40%	9%	6%	0.0%	0.0%	37%	8%	100%
<i>PLCFC</i>								
Total unique words	61,175	12,806	0	553	2,984	35,843	16,179	129,540
Average	6.29	1.32	0	0.06	0.31	3.69	1.66	13.33
Percentage of total	47%	10%	0	1%	2%	28%	12%	100%
<i>UI</i>								
Total unique words	54,844	8,652	1,546	10,687	4,431	36,406	8,991	125,557
Average	7.5	1.18	0.21	1.46	0.60	4.98	1.23	17.16
Percentage of total	44%	7%	1%	8%	4%	29%	7%	100%
Grand total of unique words	332,952	62,399	12,116	29,588	16,754	191,303	79,953	725,065
Average	8.99	1.68	0.33	0.80	0.45	5.16	2.16	19.57
Percentage of grand total	46%	9%	2%	4%	2%	26%	11%	100%



NOTE: Darkened portion of bar represents the number of unique words contributed by this field. White portion of bar represents number of unique words already contributed by fields listed to the left of the bar.

Figure 5. Successive Contributions of Unique Subject Terms by Subject Fields in Bibliographic Records (Reversed)

UNIQUE WORDS AS INDICATORS OF SUBJECT CONTENTS

Statistics in tables 4 and 5 suggest that the DDC was a major contributor of unique subject terms to bibliographic records. This strong performance of the DDC was suspect in view of several searchers' criticism of the wording of Schedule captions and the project team's processing manipulations, e.g., expansion of Schedule ranges and addition of dummy captions.

A random sample of the four libraries' bibliographic records was analyzed to determine whether the enhancement was a satisfactory or unsatisfactory indicator of an item's subject contents. In the analysis, unique terms contributed by the Schedules and Relative Index were described by one of five satisfactory categories or one of three unsatisfactory categories.

Table 6 lists the average number of unique terms contributed by the Schedules and Relative Index after categorization into satisfactory and unsatisfactory indicators of subject content. The average number of unique

TABLE 6
DDC AS AN INDICATOR OF BOOKS' SUBJECT CONTENTS

	LC Schedules	LC Relative Index	NYSL Schedules	NYSL Relative Index	PLCFC Schedules	PLCFC Relative Index	UI Schedules	UI Relative Index
A. Satisfactory indicator of an item's subject contents								
1. Broader than the item's contents	3.15	3.28	1.74	0.42	1.17	1.21	0.53	1.15
2. Narrower than the item's subject contents	0.11	0.02	0.15	0.11	0.02	0.11	0	0.04
3. Related to the item's subject contents	1.04	0.30	0.05	0.21	0.59	0.21	0.58	0.28
4. Same as the item's subject contents	0.22	0.05	0.12	0.27	0.12	0.27	0.08	0.26
5. Not A.1-4, but the term is a satisfactory indicator	1.09	1.10	1.41	0.21	0.32	0.21	1.18	1.74
Subtotal	5.61	4.75	3.47	1.22	2.22	2.01	2.37	3.47
B. Unsatisfactory indicator of an item's subject contents								
1. Contrived or awkward terminology used	0.93	0.04	0.05	0	0.79	0	0.08	0.04
2. Nonsubject information from Schedules	0.25	0	0	0	0.70	0	0	0
3. Information added to Schedules	0.73	0	0	0	0.87	0	0.14	0
Subtotal	1.91	0.04	0.05	0	2.36	0	0.22	0.04
Total in sample	7.52	4.79	3.52	1.22	4.58	2.01	2.59	3.51
Total in entire database (See also table 4)	10.19	4.23	3.10	3.17	4.42	2.24	3.09	4.05

Note: Numbers in columns represent the average number of unique terms contributed by the Schedules and Relative Index when Schedules and Relative Index are last and next to last in the analysis.

*Number of records in each sample were (1) 96 (LC); (2) 78 (NYSL); (3) 98 (PLCFC); and (4) 74 (UI).

Schedule terms in a sample of LC records was lower (7.52) than the average number of unique Schedule terms in the database (10.19), but the majority of these terms were satisfactory indicators of subject content (5.61 of 7.52 unique terms or 75%). Most of these satisfactory terms (3.15) were broader than the subject contents of the bibliographic record. About one unique term per bibliographic record was deemed unsatisfactory, derived from a Schedule caption that was contrived or awkward in the context of the bibliographic record, e.g., "Other natural resources," "In specific industries and occupations," "Other than extractive, manufacturing, construction," and "Special topics of general applicability." The phrase, "General aspects. Examples: Journals, study and teaching," was automatically added to the records of all four libraries and was considered non-subject information in the analysis.

Most of the unique terms contributed by the Schedules to NYSL records were satisfactory indicators of content. A large portion of these terms was broader than the subject content of the bibliographic record. On the average, 1.41 unique terms per NYSL record fell into a miscellaneous category that represented a satisfactory indicator of contents, but the judge of contents was unable to characterize the relationship between the unique term and the bibliographic record. Examples of such Schedule captions were the caption "History of Buffalo" added to the title *History of Trinity Church* and the caption "History of Orange County" added to the title *Neelytown Cemetery Inscriptions on Monuments*. Such captions were usually added to records without assigned subject headings; the captions provided the context of the geographical area covered by the book, but it was not obvious to the judge from the item's title.

More than half of the unique terms contributed by the Schedules to PLCFC bibliographic records were unsatisfactory indicators of a record's subject content, evenly divided into the three unsatisfactory subcategories. Examples of contrived Schedule captions from PLCFC bibliographic records were "Inflated ball driven by foot" added to the title *The ABCs of Soccer Sense*, "Games not characterized by action" added to the title *Logic for Beginners through Games, Jokes, and Puzzles*, and "Other than musical sport and game performances" added to the title *Circus Days*.

The phrase "Standard subdivisions" in PLCFC records was categorized as nonsubject information. PLCFC records automatically enhanced with the caption "General aspects. Examples: Journals, study and teaching" accounted for an average of nearly one unsatisfactory term per record. LC and PLCFC Relative Index entries were satisfactory indicators of subject contents.

Most of the unique terms in the Schedules and Relative Index added to UI bibliographic records were satisfactory indicators of subject content. UI records had a larger share of captions-related subject contents than the three other libraries. One contrived caption was "Other analytical methods." "General aspects: Journals, study and teaching" occurred in UI records on occasion, but not with the frequency of LC and PLCFC records.

Not all terms added by the DDC were satisfactory indicators of books' subject contents. Generally, unique terms contributed by the Schedules

that were satisfactory indicators of subject contents were broader than books' subject contents. At NYSL and UI, the Schedules and Relative Index supplied few unique terms that were unsatisfactory indicators of books' subject contents.

At LC and PLCFC, the Schedules contributed about 25% and 52% unique terms, respectively, to bibliographic records that were unsatisfactory indicators of books' subject contents. These unsatisfactory indicators came directly from the Schedules. They also were added to records by the DDC Online Project team in an attempt to replace ambiguous Schedule captions with more precise ones. In view of this finding, the attempt to improve upon the wording of Schedules did not provide satisfactory results.

SUMMARY

Computer procedures were used to enhance bibliographic records in four participating libraries with subject terms from the DDC and to create classification records for displaying the subject matter of items bearing a DDC class number. However, the project team had to make decisions about the DDC to ensure that the subject enrichment was indicative of the subject matter of library material found at the library bookshelves. The team selected only those fields of Schedule and Relative Index entry records that bore subject terms. The team also changed the wording of Schedule captions and notes, deleted unposted Relative Index entries that would have created blind references in the catalog, and inserted additional Schedule records to complete the reference structure and enable browsing the DDC hierarchy. These processing manipulations were necessary to prepare the DDC for access by online catalog users.

When the databases were built, they were analyzed to determine the extent of subject enhancement provided by the DDC. The average number of subject headings in bibliographic records was comparable to numbers found in previous studies. All bibliographic records were enhanced with one Schedule caption, which was the best match of the record's class number with a class number in the Schedules, and, for class numbers exceeding three digits, with one Schedule caption from the next highest level of the Schedules. The average number of Relative Index entries per bibliographic record ranged from 1.48 (NYSL) to 3.48 (UI); however, Relative Index entries were not displayed in bibliographic records because they were indicative of subjects that might be assigned a particular class number but did not describe the subject matter of any particular item.

Schedule records were accessed by users when searching and browsing the classification through three subject searching approaches in the experimental online catalog. Schedule records bore one unique class number and caption, an average of 1.1 Relative Index entries, and 0.27 Schedule notes. Searchers expressed disappointment in the small number of notes per Schedule record and requested more.

Analyses of the links between the Relative Index and Schedules showed no one-to-one relationship existed between these two tools. The percentages of DDC class numbers in the 19th edition of *DDC* without Relative Index entries ranged from 11.5% (NYSL) to 51.3% (PLCFC). Con-

versely, not every Relative Index entry in the 19th edition of DDC was represented by a class number and caption in the Schedules.

Fields bearing subject terms in bibliographic records were analyzed to determine the average number of unique words contributed successively by these fields. When subject headings and titles were first in the analysis, these two fields contributed 46% of the total number of unique subject terms. The Relative Index and Schedules contributed 47% of the total number of unique subject terms when these two DDC fields were *last* in the analysis. When analysis was reversed, DDC fields were first and contributed 55% of the unique subject terms to bibliographic records. Subject headings were last and contributed only 11% of the unique subject terms.

Categorization of DDC terms as satisfactory or unsatisfactory indicators of books' subject contents forced reinterpretation of the results of tables 4 and 5 showing the successive contributions of unique terms in subject fields of bibliographic records. The contributions of the Schedules to LC and PLCFC records were reduced by one-quarter and one-half, respectively, in view of the large number of terms deemed unsatisfactory indicators of subject content.

These results suggest that the contribution of unique words by the DDC was comparable to and sometimes exceeded the contribution of unique terms by subject headings. Also, Schedule captions in certain identifiable areas of the Schedules required rewording to improve their understandability to online catalog users. In the future, pretesting the rewording with online catalog users is advisable.

Unique terms contributed by the DDC were usually more general than the book's contents, while subject headings expressed the book's contents more exactly than the DDC. The analyses of enhanced bibliographic records, classification records, and unique terms in fields of enhanced bibliographic records demonstrated that the DDC was a major contributor of unique, general subject terms.

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A Tool for Comparative Collection Analysis: Conducting a Shelflist Sample to Construct a Collection Profile

Beth M. Paskoff and Anna H. Perrault

Shelflist samples have been advocated as a method of collection evaluation, but few discussions of the use of such samples are found in the literature. A random sample of 5 percent of the shelflist at Louisiana State University was studied to provide detailed information about the distribution of imprints according to age and language of publication, percentage of duplication, and distribution of serial and monographic formats in each subject section of the collection. The resulting collection profile provides a multi-dimensional, quantified description of the collection using a different analytical approach than either a shelflist measurement or the RLG Conspectus.

It is difficult, even with years of experience, for librarians to determine the characteristics of a large library collection. When new library administrators, collection managers, subject bibliographers, or reference librarians are hired, they must quickly familiarize themselves with a new collection. For many years, the paramount method of collection analysis or assessment was checking benchmark bibliographies, a method that analyzes only one segment of a collection at a time.

In the decade of the 1970s, quantitative methods of collection assessment gained wide acceptance. One such method is the shelflist count, which gives a title count for each subject classification/call number division. Although a shelflist count is useful both locally and for comparison with similar data from other libraries, shelflist counts are strictly one-dimensional measures. That is, shelflist counts give a quantitative profile of a library collection from only one point of view, the number of titles or volumes in each call number grouping.

Effective collection evaluation and management require a more thorough knowledge of the content of a library collection than simply the num-

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ber of titles in specific call number categories. Although an annual shelflist count has been conducted at the Louisiana State University Library since 1976, the method's inherent limitations prompted the humanities and science bibliographers at LSU to seek a profile of the collection that would yield more detailed information, such as the distribution of imprints according to the date of publication; the distribution and/or clustering of foreign language imprints by date and call number; the number and distribution of both monographic and serial titles; and the amount and distribution by call numbers and library location of duplicate copies. The best method for obtaining such data is a shelflist sample incorporating all of these variables.

Conducting a shelflist sample is not a recent innovation; it is a proven technique, advocated in Hall's *Collection Assessment Manual*¹ and in the *Manual for the North American Inventory of Research Library Collections* prepared by Reed-Scott.² However, there have been only a few recent discussions of shelflist sampling for the purpose of collection analysis in national collection development forums and in the library literature. An early use of shelflist sampling was by Fussler³ who began his classic study of the use of books in large research libraries by selecting a sample from the shelflist. An article by Goldstein and Sedransk⁴ in 1977 reported on the use of a shelflist sample to evaluate and compare the Jewish history collections of seven university libraries in New York. While restricted to one specific subject, the article pointed out the value of shelflist sampling for resource sharing. Another shelflist sampling project was reported by Burr⁵ in 1979. In this project, the shelflist sample was used to evaluate the library's holdings for their support of the instructional programs of the university. In 1980, Magrill and Rinehart⁶ used a shelflist sample of a small part of a collection to select books for a preservation study.

METHODOLOGY

The shelflist sample at LSU was conducted by paraprofessionals in the collection development office, under the supervision of the bibliographers. A random sample of 5% of the 785,000 titles in the shelflist was used. A random number table was used to select the initial shelflist card for each shelflist drawer in the study. After this, every twentieth card was sampled, as suggested by Hall.⁷ Three employees were trained in the sampling methodology and were assigned blocks of shelflist drawers to complete. Approximately 352 hours of staff time over thirty-five work days was required to complete the sample.

A work form (see figure 1) was used to record the data from the shelflist. A separate sheet was used for each range of call numbers previously used in the LSU shelflist measurement. The call number range was noted in the upper left corner of the form. Categories for date of publication were listed on the left side of the form, with a final category to be used when no date was given. The broad time spans for the first two ranges were selected because of the lower rates of publication in those eras; it was thought that LSU would not have a large number of imprints in those time spans.

Two large sections were designated across the top of the work form, one for monographs, the other for serials. Within each of these sections, divi-

sions were made for language of publication: English, French, Italian, Spanish/Portuguese, Germanic languages, Slavic languages, Asian languages, Classical languages, and Other. Language of publication, rather than country of publication, was the important variable in this section. These categories reflected the bibliographers' need for information about the LSU collection. Libraries with more extensive Asian language collections, for example, would perhaps choose to identify Chinese, Japanese, and Korean publications separately.

A separate work sheet was used for each portion of the collection to be studied. When a shelflist card was selected for the sample, the language of publication, date, and format of the publication were determined. A tally mark was then placed in the appropriate part of the grid on the work sheet. For example, a Spanish language book published in 1943 would be recorded with a tally mark in the box formed where the column for Spanish and Portuguese language monographs intersected the row for the decade of the 1940s. A German language journal that started publication in 1922 would be recorded with a tally mark in the box formed where the column for Germanic serials intersected the row for the decade of the 1920s.

The bottom of the work sheet was used to tabulate information about duplicate copies of the same edition of a title. The categories across the page were date of publication, number of copies, number of copies withdrawn, and number of copies in any of six specific locations other than the regular stacks (Reference, Business/Government Documents, Louisiana Collection, Chemistry, Library Science, McIlhenny Natural History Collection). An additional category was assigned for "other" as well, to accommodate any additional, infrequently used holding locations. This information was to be used to look for patterns of duplication by subject or location, or to identify areas with high numbers of withdrawn (lost) titles. In recording the data, publication date and total number of copies were listed for sampled shelflist cards that showed more than one copy. When any copies had been withdrawn, or were in a non-stack location, the number of such copies was also recorded in the appropriate space. If the library still owned more than two copies of any edition, regardless of the location, the call number was recorded as well in order to tag these titles for subsequent review.

As with other aspects of library management, efficient and detailed analysis of the data from a shelflist sample would not have been possible without the extensive use of computers. The data from the work sheets were entered on an IBM-PC, using *dBase II*. The data were sorted by time period and language, and tables showing totals and percentages by LC classification were prepared. *Stat-Graphics* software was used for statistical analysis and generation of tables and plots.

RESULTS OF DATA TABULATION

LANGUAGES

In almost any United States library, English will be the predominant language of the collection. That this is indeed the case at LSU is indicated by the fact that English language titles constitute 83.15% of the collection. Figure 2 shows the exact distribution in the LSU collection of monographs

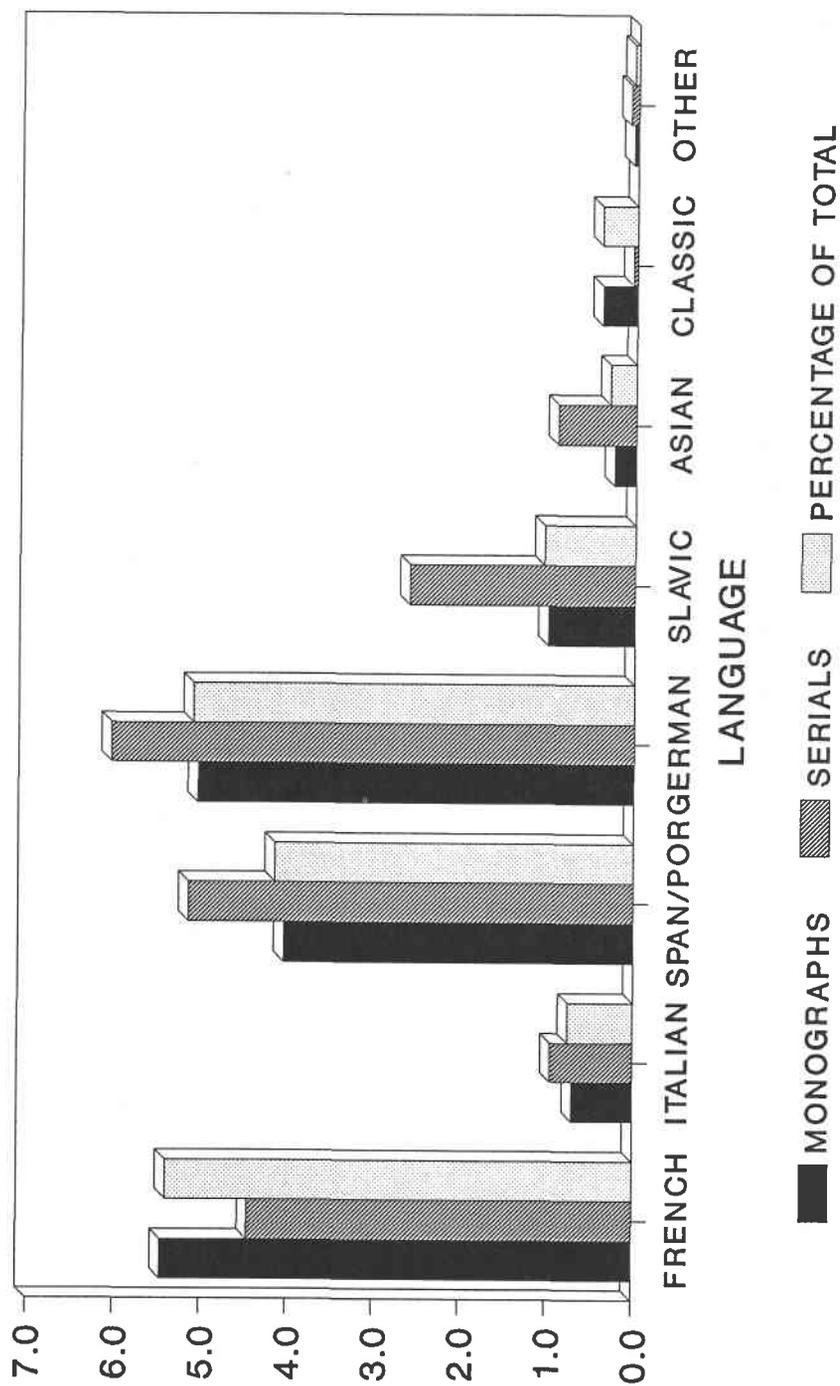


Figure 2. Percentage of Foreign-Language Monographs and Serials by Language

and serials by major language groups.

The pattern revealed by the study of holdings by language demonstrates that languages other than English are well represented throughout the collection. As an example, the distribution of French and German language monographs throughout the entire LC classification is shown in table 1.

While the D classification holds nearly 15% of the French monographs, only 8% are in French history (a detail not shown in the table). Similarly, of the 36.9% of the French titles in the language/literature classification, only 26% of these are in French literature. (See table 2.)

TABLE 1
PERCENTAGE OF FRENCH AND GERMAN MONOGRAPHS BY LC CLASS

Class	Language	
	French	German
A's	0.38%	0.28%
B's	6.42	9.28
C's	1.38	0.79
D's	14.95	13.44
E's	0.99	0.50
F's	2.90	1.36
G's	3.22	3.02
H's	6.03	7.40
J's	1.76	2.02
K's	0.31	0.00
L's	0.61	0.43
M's	2.99	6.42
N's	3.21	3.39
P's	36.90	31.12
Q's	10.49	11.73
R's	1.29	0.78
S's	1.36	1.51
T's	1.79	2.12
U's	0.38	0.14
V's	0.18	0.07

TABLE 2
FRENCH AND GERMAN LANGUAGE MONOGRAPHS
IN LITERATURE CLASSIFICATIONS
AS A PERCENTAGE OF ALL MONOGRAPHS IN THAT LANGUAGE

Class	Language	
	French	German
P	0.69%	1.23%
PA	0.84	2.02
PB-PF	0.68	4.04
PG-PH	0.23	1.30
PJ-PM	1.23	0.43
PN	3.30	1.83
PQ	26.10	2.23
PR	0.92	0.72
PS	0.15	0.00
PT	0.17	18.52

The pattern is similar for German language publications. In this area, as in the French language holdings, the concentrations are low for the humanities subjects. The distribution outside the humanities indicates a library collection in which foreign language materials are not confined just to the language and literature areas of the collection but extend more broadly to the social sciences and sciences.

TIME-SERIES ANALYSIS

The pattern of monographic holdings in each of three of the language categories—English, French, and German—is also apparent in an elementary time-series analysis of number of titles in each language. The results of this analysis are presented in figures 3 and 4 that indicate relatively low collection levels for the earlier periods. The drop traced during the early 1980s in both tables is apparent because the totals for that time period represent numbers of titles for only the first third of the decade.

Part of the explanation for the particular shape of each curve traced in both figures has to do with circumstances peculiar to LSU. For example, the LSU materials budget was not adequately funded during the 1960s. As reflected in the graphs, increased materials budget funds and the employment of full-time collection development staff in the mid-1970s account for the dramatic rise in the numbers of publications acquired. Though titles are not necessarily purchased in the year they are published, the imprint distribution corresponds fairly closely to funding and buying patterns at LSU. When this study has been replicated in other libraries, it will be possible to compare the curves to learn if there are similar patterns of language holdings for different subject areas.

SERIALS

The differences among various disciplines in the emphasis each gives to the use and acquisition of serial publications are well known. The distribution of serials throughout an individual research collection is therefore likely to vary widely from humanities to social sciences to the sciences and technology.

The shelflist sample at LSU revealed that only 5% of the titles in the collection are serials. The percentages within individual subject areas, however, varied widely. For example, 41% of the titles classified in the A's consist of serials; a rather high incidence, but not unexpectedly so because many general periodicals are classed in this area. Within the sciences, 11% of the QB's, 15% of the QE titles, and 16% of the TN's are serials. At the other extreme, in the humanities, only 1% of the DA's or the M-MT's are serials. Middle ranges are represented by HD with 7% and SB with 8%.

These small percentages are especially noteworthy in view of the vital role played by serials in communicating the results of recent research. Because of their expense and the number of volumes of each title occupying shelf space, serials management is always an important consideration in collection development decisions. Even though LSU has a large serials collection, the actual number of serials titles comprises only 5% of the titles in the total LSU collection. The collection profile analysis confirms that a very small part of the library's total number of titles accounts for a

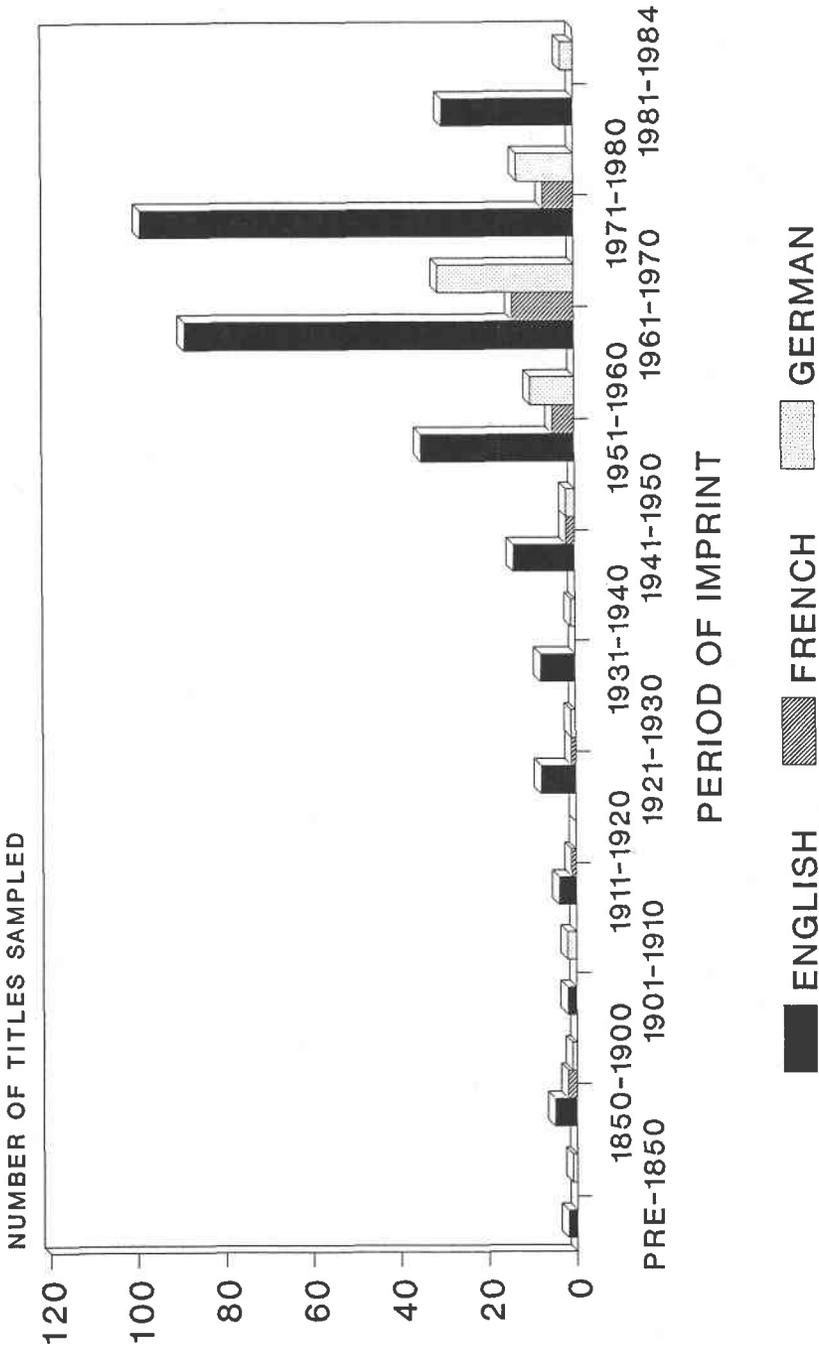


Figure 3. English, French, and German Monographs in LC Classes B-BD by Imprint, 1850-1984

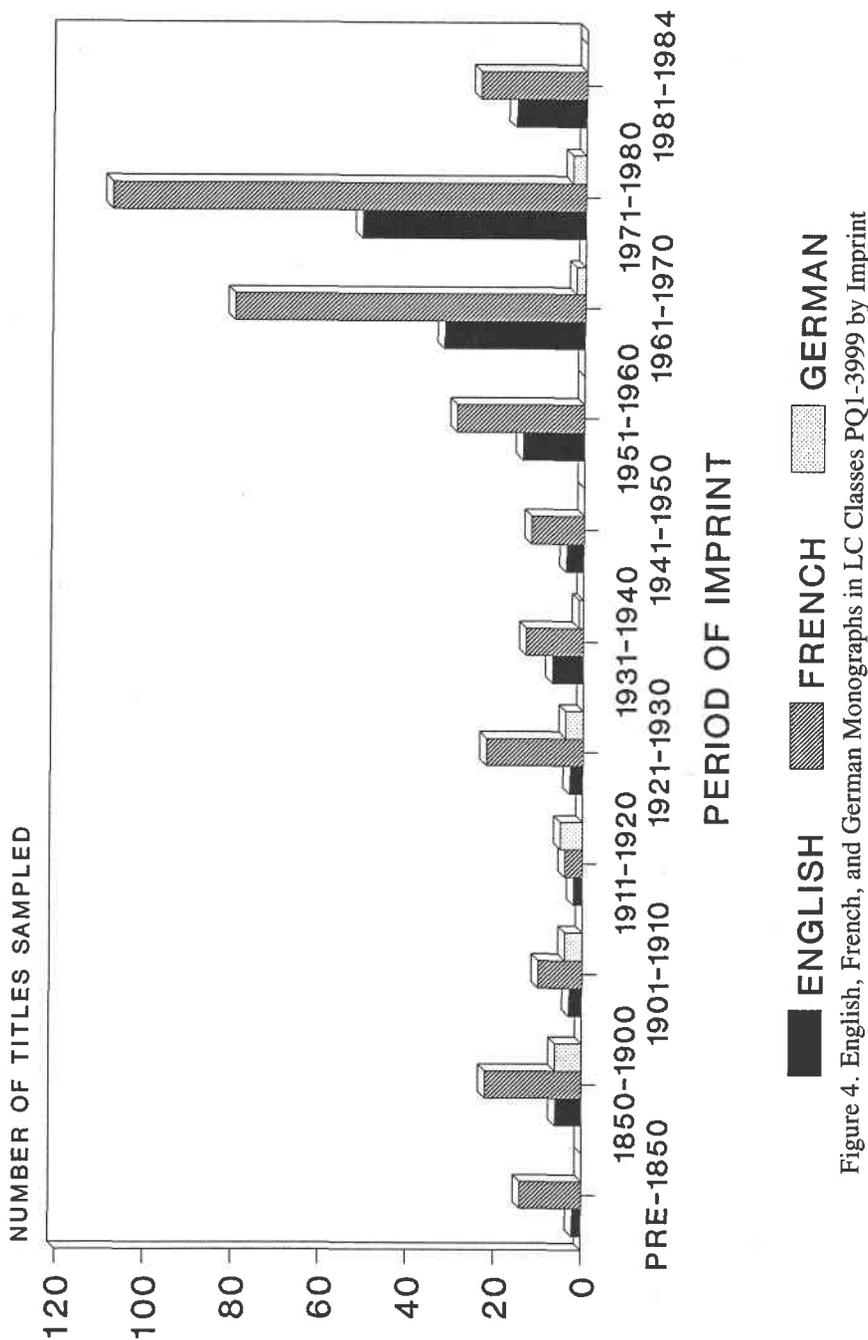


Figure 4. English, French, and German Monographs in LC Classes PQ1-3999 by Imprint

disproportionately large share of the materials budget.

The usefulness of the collection profile analysis is not limited to revealing coarse, aggregate features of a collection. It is also a means of examining and understanding the structure of the serials collection in terms of language and subjects. Because of high subscription costs, a larger portion of the library materials budget frequently is allocated to serials than to monographs. While an equal division of funds between monographs and serials was once thought to be the ideal financial distribution, many libraries are now struggling to hold the serials portion to 60 or 65% of the budget.

COLLECTION DEVELOPMENT POLICIES

As librarians revise collection development policies, or write them for the first time, the collection profile analysis can provide the collection manager with in-depth information about the collection that can be incorporated into the library's acquisitions policy. In a small (1,130-volume) health science collection, Pedersen⁸ used bar graphs to show the size, subject distribution, and age of the collections. He used this profile to determine if the library's collection actually represented the intent described in its collection development policy, and to plan for future collection growth. He examined every card in the shelflist, a procedure that is not practical in most libraries. Within a large library, however, an analysis of the sort undertaken by Pedersen can be practicable when performed on a sample of the shelflist.

When a music policy was written recently at the LSU library, the use of the collection profile analysis revealed the language distribution and chronological structure of the collection. The librarians were able to document those areas that had previously been emphasized, as well as to identify weaker portions of the collection that might merit further attention.

USE OF THE SHELFLIST SAMPLE

Collection management encompasses activities that are data dependent for decision making. Budget allocations, preservation, use and loss rates, and strengths and weaknesses for resource sharing are a few of the areas of collection management that require information about the number and distribution of titles in specific subject areas or across a spectrum of the collection. A collection profile analysis, based on a shelflist sample of all or part of the collection, provides concise, standardized information about various historical aspects of the collection as well as recent trends in growth. This data can be used to provide justifications for budget requests, accreditation reports, or planning for collection building.

At LSU, for example, when all of the engineering programs were reviewed for accreditation, the profile of the engineering collection was referred to in preparing the library documentation prior to the accreditation team's site visit. Separate information about each engineering discipline was provided to the team, as was an overview of the entire engineering collection. This provided a much more complete view of the library's holdings than the usual volume counts.

Another example involves a member of the geology faculty who wanted information about the use of foreign language publications in his discipline. He also wanted information about the need for non-English publica-

tions in other academic programs. Through the use of the collection profile analysis, the science bibliographer was able to provide data about the distribution of foreign language monographs and serials in the appropriate parts of the collection.

Almony⁹ cited two reasons for libraries to have duplicate copies of specific titles or editions in their libraries. One reason was the possible need by users for the duplicates. The other was the existence of a decentralized library system. Although duplicate copies of frequently used titles can be worthwhile additions to a collection, the long-term value of such duplicates may be diminished as demand for the titles changes. Whatever the reasons might be for retaining duplicate titles, it is useful to know where the concentrations of such duplicates are if the collection is to be evaluated and weeded.

Table 3 shows the percentage of titles in each broad LC class that has more than one copy in the LSU libraries. This information has already been used in several ways at LSU. The Automated Processing Unit needed to anticipate the number of records of added copies that would have to be input as the online catalog was brought up. The information from the collection profile analysis enabled this unit to estimate the number of staff hours that would be required for that project as automation of the catalog progressed.

Still another instance when the collection profile analysis provided valuable information for the LSU libraries occurred in 1986. In that year, the entire collection was shifted onto two additional floors of the library. Before the move, the bibliographers decided that portions of the collection should be weeded of unneeded duplicates. Those classifications that had

TABLE 3
PERCENTAGE OF DUPLICATE TITLES BY LC CLASS

Class	Duplicates as Percentage of All Titles in Class
A's	4.3
B's	5.6
C's	8.4
D's	3.6
E's	12.0
F's	9.6
G's	6.3
H's	7.0
J's	6.4
K's	7.4
L's	9.5
M's	7.1
N's	5.9
P's	6.9
Q's	7.4
R's	7.6
S's	9.8
T's	7.5
U's	4.9
V's	1.9

the largest numbers of duplicates were reviewed quickly by the bibliographers to determine which old textbooks and other outdated materials could be withdrawn.

The LSU libraries have had a long-standing policy of avoiding purchases of unnecessary duplicate copies. The highly centralized library system has only three branches that serve special collections, chemistry, and library science respectively. It was not known if there had been significant violation of the policy of no duplication of chemistry materials between the main collection and the chemistry branch library over the years. The evaluation of the information on duplicates in the QD classification by location indicated that there was an 11.1% duplication of titles. The duplication rate since 1970, however, was only 1.3%, indicating a much closer adherence to library policies in recent years.

The highest rate of duplication occurs in the E class, with substantial duplication occurring in the C's, F's, L's, and S's. This reflects deliberate duplication between the general collection and the Louisiana collection. The data also show that duplication is high in the BF's and HD's, two areas where duplication is desirable because of high enrollments and heavy use.

Data on the distribution of a collection by language and imprint year can be useful in drawing up general collection characteristics for insurance policies. Moreover, data on the number of serial and monograph titles by imprint decade can help determine categorical volume counts for the insurance inventory. While a shelflist sample will not generate a list of specific missing titles, it does have various inventory applications. Because the LSU sample includes numbers and locations of withdrawn copies, it provides some data for establishing loss rates. If shelflist samples were to be repeated every five or ten years, numbers of withdrawn volumes could be compared for different categories. A single shelflist sample can be used to identify subject areas where many titles have already been withdrawn and replaced. Such subject areas may be candidates for more detailed inventories.

PRESERVATION

The problems posed by the rapid deterioration of large segments of research library collections have been at the forefront of professional concern in the 1980s. The allocation of staff and funds to cope with these problems is an issue in many libraries. Even identifying items in need of preservation is a monumental task. The shelflist sample allows the approximate number and location of older imprints to be ascertained. It can even be the basis for, or preliminary to, a preservation census. In the absence of sufficient staff or funds it can substitute for a preservation census. Most preservation censuses begin with a shelflist sample and go on to examine the titles selected by the sample with a rating scale of elements specifically designed to yield the desired preservation data.

The shelflist sample at LSU included location codes as well as information about imprint year. Therefore, the collection profile analysis could provide data about imprints by specific location. At LSU, those books classified as "rare" are housed separately in Special Collections and are given special conservation attention. The earliest imprint category for which data were gathered in the shelflist profile was pre-1850. To ascer-

tain how many pre-1850 titles were not already in the Special Collections areas, a table of pre-1850 imprints was constructed, showing the number of titles cataloged as rare as a percentage of the total number of titles for each LC classification. The results indicated that the majority of the books in the collection that were published before 1850 were not located in Special Collections. Of 149 sample titles in the A's, a total of 7, or only 4.7%, were found to be cataloged already as rare. The data in the table also were divided into monographs and serials. In the French history classification, there were eight serials in the sample that began publication before 1850. Three of these (37.5%) were cataloged as rare. Of the 217 monographs in this group, only 27 (12%) were identified as candidates for Special Collections.

Not every title published before 1850 is rare or in need of preservation, but the data from a shelflist profile can pinpoint areas with large numbers of older imprints. The same methodology can be used to analyze the imprints from the 1850-1900 time span, the imprint years in which the greatest preservation problems exist. If LSU's books from these years are studied, there are a few subject areas, such as the QE's, which have unexpectedly large numbers of titles. There was an increase in geologic publishing during this time, and the strong research program at LSU has included an interest in the history of geology. This historical interest is reflected in the library's collection. A further check of the duplicate location charts showed a very small percentage of QE's in the rare or natural history special collections, indicating that the QE's in the general stacks should be checked for condition and possible rare items. Thus, the subject, imprint year, and location charts can all be used together for indications of which areas of the collection would be good places to start preservation measures. If a sample is done specifically for preservation, as Magrill and Rinehart¹⁰ did, the elements in the sample can be tailored to yield just the information that is needed.

SHELFIST SAMPLING AND RESOURCE SHARING

Since the North American Collections Inventory Project was instituted by the ARL Office of Management Studies, many other research libraries have begun the task of carrying out a major collection assessment using the RLG Conspectus. To complete the Conspectus, library collection development personnel must determine retrospective and current collection strengths for some 5,000 individual call number groupings from the Library of Congress Classification. Librarians usually find it much easier to rank a library's Current Collection Intensity, the rate of current buying, than to assess the Current Collection Strength. The latter requires knowledge of the retrospective holdings of the library to determine the research strengths of the collection.

The data obtained from the shelflist sample at LSU were immediately used in cooperative national library projects. The Library was just beginning to fill out Conspectus work sheets in conjunction with other southeastern research libraries as a facet of a regional cooperative Title IIC grant project. The shelflist samples provided much information that could be used in assessing current collection strengths. The sample provided concrete data to back up the value judgments made by the bibliographers based

on their experiential knowledge from years of working with the collection. The quantitative findings confirmed their qualitative evaluations.

A shelflist sample can provide much information about the existing collection. For example, if a bibliographer is working with the philosophy/religion *Conspectus*, the shelflist samples can profile that collection for number of titles by imprint according to the language of publication, as presented in figure 3. These factors would be influential indications as to the strengths or weaknesses of the philosophy/religion collection. The data by language of publication can be used to determine the language codes in the Current Collection Strength category on the *Conspectus*. (See table 2.) This is one aspect in which the data from the sample can be relied upon without the need for other assessment tools to complete the picture.

A shelflist sample need not be a time-consuming project. The sample will not yield data in the exact call number breakdown found in the *Conspectus*, but will give a very accurate overview of LC subdivisions. A sample can be used to spot specific segments in which more in-depth bibliographical analysis, such as checking a definitive bibliography on the subject, might be needed.

Shelflist measurements can provide librarians with information about the size and growth rates of their collections. The National Shelflist Count published in 1986 is another document that adds a piece of data useful for resource sharing. Since the National Shelflist Count began as a project of the RTSD Chief Collection Development Officers of Large Research Libraries Discussion Group in the mid-1970s, more than 50 libraries have participated in the National Shelflist Count, and have shared the results of their measurements. The NSC is still the only quantitative comparative data available on the collections of major research libraries in North America. However, Branin and others note that "Focusing on collection size alone, as the National Shelflist Count project does, can create false impressions about the real quality of a library's holdings."¹¹ Library collections with the same number of imprints in a given subject could erroneously be thought to be equal in quality.

While both shelflist counts and shelflist samples are useful by themselves, independent data from each can be combined to derive a more complete picture of the collection strengths than either measure alone can provide. In collection assessment, the linking of a shelflist sample with the shelflist count provides a strong quantitative profile with the addition of the qualitative factors of imprint age, language, and serial/monograph distribution. In other words, the number of titles for a given subject, as defined by a major LC subdivision, can be assessed according to the number of foreign language imprints, the number of serial titles within the subdivision, and the distribution by imprint date. This information about numbers of volumes and formats provides a profile that enables qualitative judgments to be made.

COORDINATED AND COOPERATIVE COLLECTION DEVELOPMENT

Historically, librarians have found participating in resource sharing—the simple practice of lending and borrowing—much easier than achieving

coordinated and cooperative collection development. Cooperative collection development means giving up ownership much more so than does resource sharing, and librarians have been more reluctant to trust acquisitions to other libraries. The development of online networks has greatly facilitated resource sharing, although it is not possible to find exact locations for all titles needed on interlibrary loan.

In order to write coordinated/cooperative collection development agreements that define collection responsibilities in specific subject context, it is desirable to know as much as possible about each of the library collections involved. The RLG Conspectus and the North American Inventory of Research Collections form a database that is a cornerstone for coordinated and cooperative collection development among the research libraries in North America. European libraries are being added to this network as well.

In the Conspectus, collections are seen in silhouette. It is an excellent vehicle for assigning primary collecting responsibilities, but it does not reveal the differences in similar collections. The Conspectus was designed to show the strengths and weaknesses of individual library collections; it was not designed to be a comparative vehicle between library collections, except in the most general sense. Two libraries could each have the same section of the Conspectus assessed at level 4F, but actually have dissimilar collections with low title overlap. The number of titles could be about the same and neither the Conspectus nor the National Shelflist Count would differentiate between the collections. However, a collection profile analysis could reveal one library as owning more pre-1900 German imprints, while the other might own more post-1950 French imprints. Two collections that were thought to be very similar would actually be found to be quite different. Such data can point to areas in need of an overlap study, or indicate areas where differences make overlap studies unnecessary.

Accepting and giving up collection responsibilities in coordinated/cooperative agreements is made easier when collection profiles make it clear just exactly where the strengths and weaknesses lie in individual collections. The shelflist sample can also more specifically target for resource sharing the most likely library to own a title in a specific subject for a specific time frame and in a specific language.

After performing annual shelflist counts for a decade, a number of libraries now have data on growth rates of collections by specific subject groupings. Individual libraries can track growth rates by fairly specific subject areas for this ten-year period. The possibility exists that shelflist counts will be performed in the near future by computers in those libraries with machine-readable shelflists. United States government documents that are not included in the cataloged shelflists of many research libraries, but are now being included in automated catalogs, could also be included in the sample.

A sample, gathered from a number of libraries, could be analyzed to yield comparative data about the collections. If an expanded collection sample were taken every five years, it would be possible to compare the increase or decrease in imprints by language and by subject; or the ratio of monographs to serials by subject. Like the United States Census, certain

main tables could be printed, but tapes could also be purchased and programs written locally to produce data in any desired configuration. This would be the most comprehensive comparative data that have ever been available to collection administrators.

Automated shelflist sampling offers the possibility for much more detailed analysis than heretofore available. If the National Shelflist Count in the future is conducted through automated catalogs, more elements could be included in the sample. The data could produce a true collection profile. Some of these capabilities are already available. Recently, the Research Libraries Group announced the availability of Bibliographic Statistical Analysis (BSA). Librarians can request that records be analyzed by subject heading or classification number, language, place of publication, publication date, and record type. RLG states that, if the records are available in the Monthly Process File, it is possible to produce "a comparison among several institutions of collection strengths in a certain subject area."¹² While not all libraries have access to this new form of collection analysis, the capabilities offered by the computer systems used in large networks offer many options for analysis that have not been previously available.

CONCLUSION

A sample of 5 percent of the shelflist at Louisiana State University was used to provide a more detailed understanding of the language, age, and format of the library's collection. The collection profile analysis revealed greater foreign language strengths throughout the collection, more pre-1850 imprints in the general stacks, and fewer duplications than had been anticipated. The results of the analysis have been applied in a variety of ways, including completion of the RLG Conspectus, revisions in a collection development policy, and providing documentation for an accreditation review of an academic program.

The benefits of a shelflist sample to produce a collection profile analysis of different aspects of a single collection are clear. In the past, comparative samples of narrow subject fields have also been conducted among groups of libraries. Automated shelflist sampling will permit collection profiles of many libraries to be created on a large scale, with more analysis than existing methodologies have permitted. The resulting insights into the nature of library collections will add to the understanding of development and management of library collections. The authors intend to conduct further research with other library collections in the use of collection profile samples for comparison of research library collections.

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Notes on Research and Operations

Linked Systems and the Online Catalog: The Role of the OSI

Richard W. Boss

The online patron access catalog has finally come of age. In hundreds of libraries throughout North America patrons can access the majority of the library's holdings from any one of several terminals using either a menu-driven or command mode. The online patron access catalog is a dramatic improvement over the card or COM (computer-output-microform) catalog because it provides:

- *More access points to holdings.* Catalogs arranged in the traditional sequence—whether in the form of cards or microform—provide only a limited number of access points to the catalog record. A book by Martin Ross with the title *Data Transfer in Analog and Digital Telecommunications Systems* could be found in a card catalog only under the last name of the author, the first word in the title, and the subject headings "Communications" and "Data transmission." A search under "analog," "digital," "telecommunications," or "systems" would not retrieve anything. In a machine-readable database mounted on a system with keyword searching capabilities, it would be possible to search for and identify the book using all of the access points in card or COM catalog, plus the four additional keywords in the title—all of the terms in common usage today, but not used as subject headings in library card or COM catalogs.
- *More relevant search results.* In a system with Boolean search capabilities it would be possible to execute very specific searches, thus reducing the number of irrelevant records retrieved. The following example illustrates the precision of Boolean searching:
 - data transfer
 - OR data transmission
 - AND digital OR analog
 - NOT data storage
 - ONLY monographs

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ONLY English language

ONLY published 1978 OR later.

The impact of such capabilities on staff and users can be gauged readily by checking a few items in a card or COM catalog. A mine of information is hidden in the middle of titles and subject entries. Having direct access to this data would enable a library to make better and more extensive use of the materials in its collection and to meet users' needs more efficiently and promptly.

- *Remote access.* An automated system can be accessed from anywhere inside or outside library buildings.
- *Availability information.* An automated system that includes circulation as well as online patron access catalog software can provide not only holdings information, but also availability information. The system shows what is out on loan and when it is due to be returned. A patron is usually more concerned with what is available, than with what is held by a library.
- *Greater exploitation of materials through improved inventory control.* The automation of circulation in addition to the patron access provides enhanced inventory control through rapid follow up of overdues, sophisticated fine-tracking capabilities, and ready identification and blocking of delinquent patrons. Automated systems offer streamlined reserves (holds) procedures, enabling library users to obtain materials of interest to them more rapidly. Such a system also can be used to undertake electronic shelf inventories of library holdings, a task often neglected in libraries with manual systems because it is labor-intensive.
- *Improved collection development.* An automated circulation control system also has the ability to readily output detailed usage statistics. This provides a library with reliable data on which to base future acquisitions and weeding decisions.
- *Access to materials on order.* An automated library system with linked acquisitions and serials control software makes it possible for a patron to determine what is on order and what is in process. Holds or reserves can then be placed on wanted titles. Library staff are alerted when the number of holds against a title warrants review for the possible ordering of additional copies.
- *Improved staff utilization.* Labor savings can be expected as staff are freed from repetitive tasks such as statistics compilation, filing, and the look-up and typing of overdue and fine notices. These tasks not only require considerable staff time, but the process is almost always behind schedule. Such resources can be deployed more effectively in direct service to users, especially assistance in getting to needed materials.
- *Access to the resources of other libraries.* The installation of an automated library system not only improves access to the resources of the library being automated, it also offers that library the opportunity to access the automated systems of other libraries using the terminals on its system. Although some observers criticize the relative lack of sophistication in currently available linkages among automated library

systems, such linkages allow an operator on the terminal of one system to access the database of another system; to search that file to see whether that library holds a wanted item; to check the availability of the item; and to leave an electronic message requesting the supply of the material on interlibrary loan, offering great advantages over manual methods. The most obvious improvements are in the speed of determining the availability of the wanted item, and the speed of notifying the holding library that a loan is required.

The value of an online patron access catalog can be significantly increased by expanding its scope to include the resources of several libraries. A library collection of a few thousand or tens-of-thousands of titles can become one of a million or more titles. What limited evidence we have suggests that resource sharing increases dramatically when patrons can see what is available in their metropolitan area or region. Interlibrary loan often goes up 300 percent or more. Reciprocal borrowing increases even more dramatically. In fact, library patrons are more than five times as likely to go to where the book is than to request it on interlibrary loan.

In the 1970s and early 1980s resource sharing was facilitated by putting libraries on a common automated library system. However, that has its limitations. Libraries give up local control, the procurement process slows down when several institutions are involved, and telecommunications and systems management costs may be unattractively high.

The preferred solution may be the linking or interfacing of separate systems, with dial-up access from one system to another. Some 97 to 99 percent of the searches would then be against a library's own system, incurring little if any long-distance charges. Intersystem searches, which may incur such costs, would be a second step taken only if the need could not be met by the local library.

The key question then becomes the establishment of a suitable interface.

INTERFACING DEFINED

When one system is linked to another either because different functions are on separate machines or in order to accomplish the transfer of information between separate systems, the systems are said to be "interfaced." Before discussing types of interfaces it is necessary to examine the various reasons why libraries want to interface systems because the interfacing capability of a system should be developed with all of those needs in mind, rather than solely resource sharing or another single application.

REASONS FOR INTERFACING

Libraries may seek interfaces for any of the following reasons:

- Transfer records from a bibliographic utility to an integrated local library system;
- Transfer records between a single-function local library system (such as an acquisitions or serials control system) and an integrated, multi-function local library system because the former system performs some functions better;
- Facilitate resource sharing (interlibrary loan and reciprocal borrowing) by linking two or more libraries' local library systems;

- Facilitate online ordering, claiming, and invoicing of library materials by linking a local library system with the system of a book serials jobber;
- Facilitate transfer of financial or name/address data between a local library system and a non-library system to avoid rekeying of information;
- Facilitate searching of the local library system from the terminals of non-library systems; and
- Facilitate remote database searching from any terminal on a local library system.

The interfaces most often sought—and the most common today—are between bibliographic utilities (OCLC, RLIN, WLN, and UTLAS) and local library systems.

A small number of academic research libraries have implemented interfaces to the automated systems of book and serials jobbers to take advantage of the speed and discounts available when they supply order information in machine-readable form.

A few libraries had implemented crude interfaces to other local library systems by the mid-1980s. Approximately twenty offered access to the local library system to all terminals in their organization, regardless of the host system to which the device was assigned. More than 50 had gateways through their CPU to facilitate access to remote databases.

Libraries are becoming increasingly concerned about interfacing among various systems. In a telephone survey of 80 major academic and public libraries in 1984, the author found little interest in interfacing. In a follow-up survey two years later, more than half expected to require all seven of the interfaces within the next five years. Eighty percent expect to require at least four of the interfaces within that time period. Forty percent expect to require at least four of the interfaces within the next three years.

Major technical and economic issues are raised by the need to develop and maintain so many different types of interfaces. Before investigating them it is appropriate to discuss the state-of-the-art of interfacing.

INTERFACING: STATE-OF-THE-ART

There are three major types of interfaces: magnetic tape, terminal-to-computer, and computer-to-computer.

MAGNETIC TAPE INTERFACES

For a number of years the only interface available was magnetic tape transfer. A magnetic tape produced from one system was loaded into another system. In the case of libraries, the Library of Congress facilitated this interface by developing the MARC (MACHINE READABLE CATALOGING) format for bibliographic records in 1968. Even today, however, there are systems which can accept MARC formatted records, but which cannot retain or output them in that format.

Tape transfer involves considerable delays. It usually takes hours to output and load a tape of several thousand records, and there are set-up costs involved. Organizations which rely on tape interfaces usually schedule tape loading no more than once a week to once a month. While some orga-

nizations find this an acceptable way of transferring information, those concerned with timeliness have sought to pursue other types of interfaces.

TERMINAL-TO-COMPUTER INTERFACES

Terminal-to-computer interfaces link the terminal of one system with the CPU of another. In the library environment terminal-to-computer interfaces have been achieved between the terminals of bibliographic utilities and most local library systems. They are simple printer port interfaces which permit the transfer of anything appearing on the screen through a cable into the local library system. The more sophisticated interfaces use a microprocessor between the bibliographic utility terminal and the local library system or special software in the local library system so that multiple-screen records do not become separated.

Terminal-to-computer interfaces have also been achieved between local library system terminals and the CPUs of other systems, either by providing the terminal with a data switch and modem or a gateway through its own CPU. The data switch permits the terminal operator to access a remote system which shares the same communications protocols (asynchronous or synchronous) by merely dialing into it and searching it using the command language of the system accessed. Since many terminals on a local library system do not require modems to access their host, this can be a costly solution. An alternative is to install a gateway in the CPU so that all of the terminals on the system can share one or more dial-out modems. Some gateways also have some software which facilitates database searching. This can consist of automatic dial, automatic log-on, searching aids, etc. Access to remote databases such as those brokered by BRS, DIALOG, and Mead Data Central can be achieved in much the same way.

There are significant limitations to terminal-to-computer interfaces. Not only may one need to dial up one system after another to locate a specific item, but one also needs to log-on and conduct a search using the command language of the system being accessed. The terminal-to-computer interface becomes a serious handicap once the number of systems to be accessed exceeds two or three because the operator is not likely to be proficient in the use of all of the systems. The interface is usually limited to use by trained staff.

COMPUTER-TO-COMPUTER INTERFACES

Computer-to-computer interfaces involve computers actually being linked so that a terminal on one of the systems can access another system and perform all of the same activities of that system with the operator using the commands of his/her own system; the interface is "transparent" to the user. They can be between identical systems called "homogeneous" systems in computer jargon, or between different systems called "heterogeneous" systems.

INTERFACING HOMOGENEOUS SYSTEMS

Interfaces between homogeneous systems in the same computer room are an established application in library environments. A number of local library system vendors have developed multi-processor configurations

which rely on high-speed "buses" or data cables to link devices.

Telecommunications and special networking software, rather than direct cabling, are required to establish computer-to-computer interfaces among homogeneous systems which are distant from one another. Such interfaces also are within the state of the art, but were not achieved in the library environment until mid-1984. It is not just a matter of establishing a physical connection. Will the terminal operator have to rekey the search when accessing another system for something that has already been searched against the local database? What if there are several systems? What if the libraries have not adopted common database standards?

The complexity of interfacing homogeneous systems at a distance can be illustrated by looking at one vendor's product: CLSI permits a search to be started on one LIBS 100 system and saved for searching on another LIBS 100 system without rekeying. Each LIBS 100 system that participates in the network is assigned a three-character mnemonic code. This code allows a terminal operator to identify the system(s) he or she wishes to access in a particular transaction. For each terminal connected to a LIBS 100 system, the library defines a default search domain (DSD). The DSD is a list of the systems which support the databases to be accessed in the course of processing a transaction initiated from the terminal. When a transaction is initiated at the terminal, the terminal's local system examines the DSD. If the DSD specifies that only the local system should be searched, then no external systems are accessed. If the DSD includes one or more remote LIBS 100 systems, then appropriate data accesses to the remote systems are included in the execution of the terminal operator's transaction. The terminal operator can override the DSD and enter in specific instructions for the searching of other systems.

The CLSI approach requires that all participating LIBS 100 systems interconnect with dedicated, 9600-baud asynchronous data communications channels. Two logical channels are required between each system pair to provide bidirectional inquiry/response capability. If the systems are physically within 100 feet of one another, the data communication link may be established using a local ES232C data circuit. If the systems are physically remote, a leased telephone circuit with 9600 baud modems provides the essential link. The two channels may be multiplexed onto a single physical data circuit.

Even when a vendor links two systems at the hardware and software levels, the searching of other systems may not be easy because a library or consortium which automates today usually decides to use full-MARC records, while many of the earlier installations have non-MARC records, thus complicating linkages. The arrangement of system files may vary considerably even though the same vendor's system is being used. In most situations it will, therefore, be necessary to develop common standards and formats before true computer-to-computer interfacing can be achieved.

Libraries must not only deal with the question of linking multiple CPUs in a single system or interfacing two homogeneous systems at some distance from one another, but also with the possible linking of a local system with a heterogeneous system.

HETEROGENEOUS SYSTEMS

Computer-to-computer interfacing between heterogeneous systems is relatively common in business organizations and among academic computer centers. Many librarians are critical of library automation vendors for not creating similar library interfaces more rapidly. However, the movement of bibliographic data among heterogeneous library systems poses technical, economic, and political obstacles that require considerable analysis.

Most of the initial research and application in the area of computer-to-computer interfacing appears to have been motivated by the desire to utilize fully expensive computer resources rather than to facilitate the movement of large amounts of information. Most of the oldest computer networks in business organizations and academic institutions link large mainframe computers in several large computing centers. More recent work has focused on distributed processing—the creation of multiprocessor systems for large companies and government agencies that wish to decentralize their computer systems while retaining central control.

Distributed processing must be distinguished from the decentralized systems approach discussed earlier. In distributed processing, a large number of computers have typically been dispersed geographically and all have been linked with a host computer at a central site. With few exceptions, these distributed systems have had a highly centralized structure with most of the processing power concentrated in one large central installation. This has been the case because highly centralized systems have been easier to design, operate, and control than decentralized systems. Even though the distributed system might involve more than one hardware type, they have typically been centrally planned systems in which software could be developed for the total system by or for the system's owner. In other words, multi-jurisdictional problems have been avoided. While a library can install two systems from the same vendor in a distributed system configuration, it is not possible to do this with systems from different vendors.

THE UNIQUE NEEDS OF LIBRARIES

What we are seeking to interface or link in the case of a library wishing to connect a local library system with bibliographic utilities, special purpose single-function systems, jobbers, or another library's system are several independently and fully developed systems. Such an effort involves interfacing computer systems with different hardware and different software using various programming languages, some of them proprietary and confidential. There may also be different file structures, operational features, command languages, record-access methods, indexing methods, system performance priorities, and so forth.

Most important of all, the competing vendors may have little incentive to cooperate with one another. The vendor that is the most firmly established in an area benefits from the inability of other systems to link with its system. A library planning to purchase a local library system and wishing to

interface with one or more existing local library systems may be pressured to match the system(s) already installed rather than selecting the system which best meets its unique needs.

While computer-to-computer interfaces are particularly difficult to achieve, direct communication between or among different systems has the advantage of providing full access to and full control of all files, except as restrictions may be imposed for administrative reasons. For example, a library could update the patron records to reflect a delinquency on any of the computers which are interfaced. In addition to searching the holdings of another library, a library could place a hold or perform an interlibrary loan charge-out transaction in another library's system.

AD HOC OR CUSTOM INTERFACES

A computer-to-computer interface can be written between two heterogeneous systems by a competent programmer with access to appropriate documentation for both systems. Depending on the complexity of the interface, the cost will be between \$60,000 and \$90,000. The problem is that the interface has to be constantly redone to keep up with dynamic changes in the systems being linked. If several interfaces are required, the cost is in the hundreds-of-thousand of dollars initially, with annual costs up to half of that.

Reasonably priced computer-to-computer communication among foreign or heterogeneous systems requires the adoption of protocols or standards for interfacing or linking systems. There are at present few protocols for the electronic communication of digital information among libraries in a network. A number of protocols developed for other applications do exist. These might be used in the development of protocols for libraries, but a great deal of additional work would have to be done.

NCLIS/NBS PROTOCOL

There is a proposed protocol for libraries developed by a task force appointed by the National Commission on Libraries and Information Science and the National Bureau of Standards. The group made its recommendations in 1977.

The NCLIS/NBS Task Force developed a protocol that would allow application tasks at one site on a network to converse with application tasks at any other site, regardless of differences in computer architecture or operating systems. The formulation of this protocol represents the completion of one major, time-consuming technical task in laying the groundwork for a multisystem library network, but much remains to be done. The work done by the task force envisioned only the linking of bibliographic utilities, the Library of Congress, and other major nodes in a national cataloging and reference service network. The task force specifically recommended that acquisitions and circulation control be handled locally by turnkey systems and made no provision for interfacing local systems with one another or with any emerging national network.

THE OSI REFERENCE MODEL

At the same time that the NCLIS/NBS Task Force was addressing the

problem of interfacing library systems, the International Standards Organization (ISO) was tackling the problem of interfacing banking, pharmaceutical, and all other types of systems. Over a period of more than two years the concept of the Open System Interconnection Reference Model emerged. The OSI Reference Model is not a detailed specification for any particular network design, but a conceptual framework within which standard interconnect procedures can be defined. Once defined as protocols and implemented by computer hardware manufacturers and software designers, these procedures would enable users of different computer systems to interface their systems and exchange information.

The OSI model is concerned with defining those elements of a computer system that impact upon linkages to external systems. Such elements include both physical entities such as the plug that connects a computing device to the power supply, and abstract design concepts such as the way in which an applications program formats data for output from the system. For the purposes of the OSI model, a computing device can be a mainframe, minicomputer or microcomputer, or a terminal with the intelligence necessary for information processing and communication. The interconnected systems may be, but need not be, products of the same vendor. The model's only requirement is that a system be connected to a physical communications medium through which access can be gained to one or more other systems. The medium can be as simple as a point-to-point communications line such as a voice-grade telephone line, or as complex as an interconnected packet-switched network such as Tymnet or Telenet.

The open systems model or concept is based on a layered architecture which segments the problems of systems linkage into different functional layers arranged in a hierarchy. Each layer has unique attributes and interacts with adjacent layers. Each layer defines a discrete task that is essential for the linking of systems, and the layers build on each other to define operations of increasing complexity. The layers defined in the OSI model and their major functions are:

- Physical layer—Permits the transfer of a simple data stream over a physical circuit.
- Data link layer—Responsible for the reliable delivery of data which directs the link and user information from one point to another or over a more elaborate multipoint link.
- Network layer—Selects a route from among the available data links in a network.
- Transport layer—Provides the controls to ensure end-user to end-user information transfer; the user does not have to be concerned about validating the actual movement of the information.
- Session layer—Coordinates the communications interchange between application processes which require the interfacing of separate systems.
- Presentation layer—Ensures compatible syntax among the communicating processes by adjusting data structures, formats, and codes to those used by the systems being linked.
- Application layer—Provides a window by which the user of a system

gains access to the communications services provided by the OSI architecture.

The OSI layers often are described by their numerical position in the model. For example, the physical layer is Level 1, and the application layer is Level 7.

Other communications protocols that have not been adopted as international standards also are based on layered models such as IBM's System Network Architecture (SNA) and Digital's DECnet. These architectures, however, are homogeneous because total compatibility occurs only within one vendor's family of products. With the open systems architecture, the layered approach is used as a skeleton on which compatibility is built between heterogeneous systems.

Much of the OSI is already a reality. The first four layers have substantially been implemented. The RS 232 interface is an example of a level 1 standard. X.25, the packet switching standards, encompass standards at levels 1 through 4. However, above level 4 the standards get more application specific and they are more difficult to develop. While libraries and banks can share a standard on the physical or network layer they cannot share one at the application layer because there are too many differences between an interlibrary loan and a fund transfer. Therefore, it is up to the library community to develop the appropriate higher level OSI standards. The most important higher level standards applicable to libraries are a standard for bibliographic and authority records transfer, an interlibrary loan standard, a common command language standard, and a reciprocal borrowing standard. The last is not necessary for remote access, but is important in reciprocal borrowing.

Implementation of the OSI at all levels will mean that an inexperienced searcher at a terminal on any library system will be able to search through a gateway in his/her system and ascertain holdings and availability at any other library. The searcher will not need to know the searching language and other unique requirements of the system being accessed.

LINKED SYSTEMS PROJECT

The Linked Systems Project (LSP) is the most substantial U.S. national-level effort to develop standards for interfacing library systems since the NCLIS/NBS Task Force and built on the efforts of that group. The participants in LSP are the Library of Congress, OCLC, RLG, and WLN. The project began early in 1980 with special financial assistance from the Council on Library Resources. The specific objective is an online communications link and intersystem data retrieval and maintenance facility to support a shared authority file.

In July 1987, the communications link became operational, enabling the heterogeneous computer systems to exchange data. The link is based on existing and emerging international standards to the fullest extent possible. Each of the institutions participating in LSP uses (or will use) a minicomputer to interface with the Telenet public data network using the CCITT (the International Telephone and Telegraphic Committee) Recommendation X.25, an internationally adopted protocol for moving data among systems or between terminals and computers. Software support for the X.25

protocol was supplied by the minicomputer vendors. The four participants jointly developed minicomputer software to implement the end-to-end Transport Protocol being adopted by the CCITT, ISO (International Standards Organization), and NISO (National Information Standards Organization, a part of the American National Standards Institute). At the Session Control layer, the three parties will collaborate on program specifications on work in process in ISO and NISO.

While initially limited to four participants, LSP is designed to be extended to additional systems. The shared authority file supports the Name Authority File Service and helps to overcome a barrier to effective exchange of bibliographic data caused by lack of heading consistency across systems. While the computer-to-computer link first was used for the exchange of authority data, it also facilitated the later development of sharing full catalog records, and eventually will include transfer of location and holdings data, transmission of interlibrary loan requests, communication with vendors, etc.

While the LSP participants sought to comply with the OSI, they deviated from it in several respects because of fiscal and human resource constraints in the participating institutions. The intent is to bring the LSP into full conformity with the OSI over the next few years.

NISO

The National Information Standards Organization, the principal U.S. standards setting body in the information area, is formulating standards on the basis of the OSI and the protocols developed by the Linked Systems Project. Work has been completed on the file transfer protocol and the standard has been adopted, an intersystem interlibrary loan protocol has been completed and is up for adoption. A common command language standard is in development. A reciprocal borrowing standard is planned. Another NISO committee has prepared a serials holdings statement and has had that adopted.

OSI REFERENCE MODEL PROSPECTS

Some doubt has been expressed that the OSI will ever be adopted by the computer industry. Failure of the industry to do so might undermine the foundation of higher level standards development work. However, there are many indications that the OSI standards will materialize:

- The National Information Standards Organization (NISO) has made the linking of systems using the OSI standards its highest priority;
- The Corporation for Open Systems (COS), a trade group which includes AT&T, Digital Equipment Corporation, GM, IBM, and 50 other computer and high technology companies has made the OSI its highest priority;
- The Deutsche Bundespost, the West German telephone company, now requires conformity to all completed OSI standards before it will allow data to be transmitted over its lines;
- The French government has recently issued a regulation requiring that governmental funds only be spent on hardware and software which supports the OSI;

- Digital Equipment Corporation is expected to release DECnet Version 5 in late September 1987 as a totally OSI compliant product;
- The Library of Congress, OCLC, RLIN, and WLN are now transferring records online using the new record transfer standard developed under the OSI and are committed to the development of the other necessary OSI standards;
- Data Research Associates, one of the major vendors of local library systems, has contractual commitments to deliver OSI-based interfaces;
- Geac, the second largest vendor of local library systems, has implemented OSI partially, with one of its customers transferring data from RLIN into its local system using the new records transfer standard;
- CLSI, the largest vendor of local library systems, has apparently committed to implement OSI in a recent contract negotiation;
- NOTIS, the largest vendor of library applications software packages, is actively developing a "front-end" communications processor which will support the OSI; and
- The majority of RFPs for local library systems with more than 50 terminals now specify OSI support.

CONCLUSION

Therefore, it appears realistic to plan for the implementation of interfaces based on the OSI standards by 1990. The estimated cost of implementing the OSI standards on a local library system may be as high as \$50,000 when they first become available, but prices are expected to drop within two or three years. Considering that the interfaces will permit not only resource sharing with other libraries, but also linkages with the systems of vendors, remote database services, and nonlibrary systems within the library's organization or community, the investment should be a reasonable one for the majority of libraries that implement local library systems.

The Subject Code: Two Unanswered Questions

William E. Studwell

The issue of a theoretical subject code for *Library of Congress Subject Headings (LCSH)* has received much attention in the past few years. Recent articles have in one way or another dealt with the topic. Some of these articles have simply elucidated the need for a code.¹ Others have promoted the code while also providing ideas and suggestions that could be used in its

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development.² Other articles, while definitely supporting a code, have discussed problems to be overcome before a code can be realized.³

Recent literature on the code has not been confined to the journals. A new, book-length, theoretical treatise on *Library of Congress Subject Headings* attempts to provide a preliminary comprehensive set of principles that may be of help in progressing toward a code.⁴ Furthermore, the code has been a topic in the meetings of several important groups, including the Subject Analysis Committee of the American Library Association's Association for Library Collections and Technical Services Cataloging and Classification Section, which has made the code a part of its agenda on several occasions since January 1988.⁵ The level of interest in a code is perhaps best summarized by the status given it in a recent review of subject access literature, wherein a substantial separate section is dedicated specifically to "Subject Heading Code."⁶

With this degree of focus on and support for a code, the first major question regarding it, Should there be a code?, appears to have been answered. Even the Subject Cataloging Division of the Library of Congress (LC), although explicitly denying the need for a code,⁷ has by its actions (accelerating improvement of subject headings, publishing three editions of the *Subject Cataloging Manual*, and stating plans for development of some philosophical principles⁸) implicitly shown some movement toward a code. Therefore, in the minds of many librarians the first question has been resolved affirmatively. Once this question has been agreed upon, the matter of economic feasibility will automatically follow in its path, for whenever something is widely regarded as necessary or highly desirable, the needed resources are found.

The second major question, Who should be responsible for the development of a code?, does not appear to be a significant point of contention. Presuming the development of a code under circumstances that even vaguely resemble those that led to AACR2, published opinion seems to agree that both LC and outside organizations/persons should collaborate on the project.⁹ (The details of roles and responsibilities, however, still need to be settled.) Therefore, the second question has probably been satisfactorily answered, at least in a broad context.

Two other major questions relating to a subject code, however, have yet to be resolved. One is whether the code should be simply a description or codification of current LC policy and practice or a set of principles that are wider and more universal than the realities of LC. Lois Chan and this author agree that although it might be theoretically and logically satisfactory to have a broad set of principles divorced from the basic concepts of LC, such a development would not be practical.¹⁰ This author firmly believes that a code should include new ideas and elements presently not in LC policy and practice, but at the same time it should not be so philosophically remote and foreign from LC that it would be difficult or impossible for LC to adopt. For example, a code that only allowed one word, phrase, or short element headings and thereby excluded LC's long chains of subdivisions would be incompatible with LC's established patterns.

Furthermore, LC's adoption of a subject code need not be a case of total, immediate change. Integration of a subject code could occur over a reason-

able span of years, for example, a decade. Overall, this author feels that a pragmatic surgeon's knife, not a dogmatic butcher's cleaver, is needed to reshape and reform LC subject headings. Of what value would be a subject code that rejects our dominant subject access system?

The second still-unanswered question is whether the code should cover matters relating to application of LCSH. Chan prefers that the code not deal with specific application guidelines or rules.¹¹ This author, in contrast, feels that broad principles for application should definitely be part of the code.¹² Otherwise, such essential issues as number of headings assigned to a record, usage of secondary headings, order of headings, and parallelism of headings will not be included under the standardizing umbrella of the code. Some of the most significant facets of the LC subject heading picture would remain unaffected, and some of the more pronounced shortcomings of LCSH would not be corrected.

In conclusion, these two remaining questions have to be resolved before the inevitable development of a code can begin. There are two alternatives. We can work diligently to come to a consensus on these questions and then proceed to collectively hammer out a subject code. It will not be easy and it will not come overnight. Or we can settle for the *Subject Cataloging Manual* and forget about the code. It depends on whether we have lower expectations and are willing to accept the lower results of the *Manual* or higher expectations and demand the higher results of the code.

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From Columbus to Computers: Automation at Oxford University's Bodleian Library

Margaret F. Maxwell

The Bodleian Library's collections reflect four centuries of acquisitions and almost as many uniquely Bodleian cataloging practices. Since September 1988 all cataloging has been done online using the DOBIS/LIBIS system and following AACR2R, MARC format, and LC subject headings. This gigantic leap from cataloging rules that date from 1939 or earlier to full conformity with standard Anglo-American cataloging practice has not been achieved without problems.

Oxford University's Bodleian Library celebrated its 500th anniversary in 1988 by going online. Although one may marvel at the library's age, one may wonder why its going online is at all remarkable. The Library of Congress (a mere infant of less than 200 years) has had an online catalog for two decades now, and even the University of Arizona Library installed online public access catalogs last year in one of its libraries. Most libraries are going online—or are at least working toward that goal.

What is remarkable, however, is the Bodleian Library itself, one of the greatest research libraries of the western world, with a collection of more than five million books, 5,000 of these dating from the fifteenth century, and several million more maps, manuscripts, and other nonbook items. Its original building, Duke Humphrey's Library, still in use as a working part of the library, was completed in 1488. The collection itself dates from 1602, the year that Sir Thomas Bodley, a graduate of Merton College, re-founded the Bodleian Library as a reference and research library for Oxford University. The earlier collection had been destroyed in mid-sixteenth century by the King's Commissioners after Henry VIII's break with the Catholic church.

What would seem to American librarians, indoctrinated as we are with the necessity of cooperation, uniform cataloging standards, and networking with other libraries, even more remarkable than the size and age of the Bodleian is its half-millennium of insularity. In the course of the Bodleian's long history it chose to develop its own cataloging rules and standards, with little regard for what the rest of the library world might do. Thus, while other English and American libraries explored cooperation in cataloging with a series of Anglo-American codes beginning in 1908 and culminating some eighty years later with AACR2 revised, the Bodleian stood aside, confident in its unique status, enveloped in the mystique that accompanies the serene and rarified atmosphere of higher learning that permeates Oxford University.

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The first catalog of the Bodleian Library, a printed book catalog, was issued in 1605. Five more book catalogs followed, until in 1860, overwhelmed by the enormous task of keeping a printed catalog up to date for one of the largest libraries in the world, sublibrarian Henry Coxe began what he called the "transcribed catalog," usually referred to as the "slip catalog." This consisted of several hundred large folio guard books in which were pasted, in approximate alphabetic order, slips of paper, one for each book in the library. Ample space was left between slips for later acquisitions; in addition, the slips were fastened in such a way that they could be moved if it became necessary.

In 1920 the huge folio slip catalog was closed and another folio slip catalog for books published after 1920 was started. Cataloging was done according to the Bodleian Library's own rules, the latest revision dating from 1939. Main entry, formulated by Bodleian rules, was normally under author. This entry was supplemented by references (not added entries) from editors and individuals involved in the intellectual content of the work. Since the catalog was based on the assumption that people knew what book they were looking for when they came to the library, no subject access was provided.

This was the situation until 1988, when online public access catalogs were introduced in the reading rooms of the Bodleian and AACR2, MARC format, and Library of Congress subject headings were adopted for the Bodleian Library's collections.

Actually, automation at the Bodleian Library had its start over twenty years earlier, in 1965, when Dr. Robert Shackleton, soon to be Bodleian Librarian, went to the United States to investigate automation possibilities offered by the Library of Congress' 1965 Project MARC. The possibility of adapting MARC, at this time in an experimental stage, to facilitate machine control of the Bodleian's collections was considered and abandoned as not being compatible with the library's unique cataloging rules. Nonetheless, in November 1966 the Librarian's report recommended machine control of the closed, pre-1920 Bodleian slip catalog of some 1.25 million books, with catalog entries going back as early as the seventeenth century. How could this best be done? The catalog needed much revision to bring all of the headings into uniformity. A team of catalogers was put to work to update the entries to the 1939 Bodleian cataloging rules, AACR having been considered and rejected as a possible standard.

The next year, in 1967, John W. Jolliffe, later the Bodleian Librarian, developed an automatic format recognition program based on optical character recognition. Jolliffe wanted to complete the retrospective conversion of the pre-1920 catalog in five years, but revision of the records was not finished until the 1980s. When revision was completed, the catalog entries were encoded and keyboarded and a multivolume computer printout was produced. This is solely an author catalog based on the 1939 rules, and does not offer subject access. There is little likelihood that this catalog will ever be a candidate for retrospective conversion. However, the guard book slip volumes that make up the catalog for 1920-to-1988 imprints, also cataloged by the 1939 rules, will eventually as time permits be converted.

In 1981 recognizing that Oxford was lagging behind other libraries in the

Anglo-American scholarly community, the University's Libraries Board set up a working party on automation to see what might be done. As an experiment, catalogs of the libraries of the English and Modern Languages faculties and of Social Sciences were automated, using OCLC's LS2000 system. This soon proved unsatisfactory for a number of reasons, among them the fact that OCLC withdrew its support of the system. In addition, the working party recognized that the Bodleian could no longer keep pace with the massive flood of material added to the collection each year (the Bodleian is a legal depository, i.e., copyright library, and thus receives a copy of every book published in Great Britain). After considerable soul searching, the decision was made to adopt cataloging practices and standards that would bring the library into uniformity with other scholarly libraries.

In December 1986 the university issued an operational requirement for a system large enough to accommodate the needs not only of the Bodleian and its dependent libraries but also of the forty Oxford College libraries. The total extent of the collections of the college libraries is difficult to calculate, because some of them are very secretive about their holdings, but they probably total another two million volumes. In mid-1987 DOBIS/LIBIS was selected as a vendor.

The next year and a half was spent preparing for the new system. Library buildings had to be rewired to accommodate increased electrical power requirements. Cataloging staff, many of whom had never used a typewriter, much less a computer, had to be trained to catalog at an online terminal. Finally, all the professional catalogers were given a ten-week crash course in AACR2, MARC tagging, and *Library of Congress Subject Headings*. The Bodleian Library, for the first time in its 500-year history, was about to offer subject access to its collections, and even more astonishing, it was going to use American headings.

On September 13, 1988, the Bodleian began online cataloging. As of June 1989 there were 50,000 records on the system, called OLIS (for Oxford Library System). OPACS, introduced in April 1989, are available in the main reading room; the system can be searched from anywhere in the university data network and eventually from anywhere in the world having access to the British Joint Academic Network (JANET), to which the Bodleian Library now belongs. The Bodleian Library adheres to full AACR2R standards for its cataloging; it makes use of UK MARC tapes from 1985 to the present. If data are not found there, OCLC and two British databases (CURL and BLAISE) are searched; if a matching record is found in any of these sources, it is used. Authority control is based on the British Library Name Authority File.

At present, libraries contributing to the Bodleian's online catalog are the Bodleian and its dependent libraries, plus the Taylorian Institute. Three college libraries, Balliol, New College, and Nuffield, have also joined, adding their records to the union catalog beginning in June 1989.

The first library at Oxford University was already well begun when Columbus set off on his perilous voyage of discovery. Now, from Columbus to computers, from hand-written slips to online catalogs, in one gigantic leap the Bodleian Library has broken out of its isolation and has joined its

strengths with those of other libraries in Great Britain and abroad. Both the Bodleian and the rest of the intellectual community stand to profit by its decision.

Serials, Links, and Technology: An Overview

Tom Delsey

A schematic overview of the constituents in the serials "universe" and the relationships that exist between them is presented. The technological environment is overlaid on the general schema and projections are made respecting the impact that new technological developments, particularly Open Systems Interconnection (OSI), are likely to have on roles and relationships among the constituents.

The impact that automation has had on the world of serials over the past twenty years is impressive. The number and range of systems supporting the processing of serial publications and access to the literature they contain are virtually infinite. Systems are available to support almost every aspect of serials processing: ordering, invoicing, check-in, claiming, cataloging, indexing, abstracting, information retrieval, interlibrary loan, and even full-text access. Ironically, however, as the availability of systems support for various aspects of serials processing and user services increases, there is a growing sense that what is most needed today is not another system to support yet another process, but rather a mechanism to help us integrate available systems capabilities to support the overall flow of information from one process to another. Ten years ago the solution to the problem was seen to lie in the "integrated" system. Today the focus appears to have shifted to "linking technologies." What we are looking for in those technologies is a means of bridging the distances that exist between the organizations, between the programs, and between the individual system components that come into play in the day-to-day business of dealing with serial publications.

In order to understand more clearly just what it is we hope to achieve through the application of linking technologies to the processing of serial publications and access to serials literature, the nature of the serials "universe" in which these support systems function must be seen. Understanding in abstract terms the components that make up that universe and the relationships that exist between them will help us appreciate the nature and extent of the support mechanisms we might hope to put in place through linking technologies.

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The major components of this serials universe can be placed in four broad groupings, each defined by the primary role the group plays in the information life cycle: the creators, the producers and disseminators, the facilitators, and the consumers (see figure 1). The first group is composed of the authors and editors of the materials that constitute a serial's prime content. The second group includes the publishers and distributors. The third group includes both the abstracting and indexing services, whose major role is to facilitate access to the intellectual content, and libraries and resource centers, which facilitate both bibliographic and physical access to serials. The last group includes the scholars, researchers, and general readers for whom the serials are designed. The four groups are not always, of course, mutually exclusive. Insofar as scholarly and certain special interest publications are concerned, there is quite often a significant overlap in membership between the first group—the creators—and the last—the consumers. The abstracting and indexing services—insofar as they provide their services through serial publication—function as producers and disseminators as well as facilitators.

The relationships that exist within this universe are of two major types: those that form between groups vertically and those that form within a group horizontally. Throughout the vertical axis the relationships between groups can be typified as those of supply and demand, with supply being generated from the top downward and demand emanating from the bottom upward. These vertical relationships function much the same as any other supply-and-demand relationship in the world of commerce, with groups at the lower end of the chain purchasing goods and services from a source at the upper end either directly or indirectly. The function of the "middle person" in the chain is often to provide a value-added service that makes purchase of the product indirectly through the services of a broker more

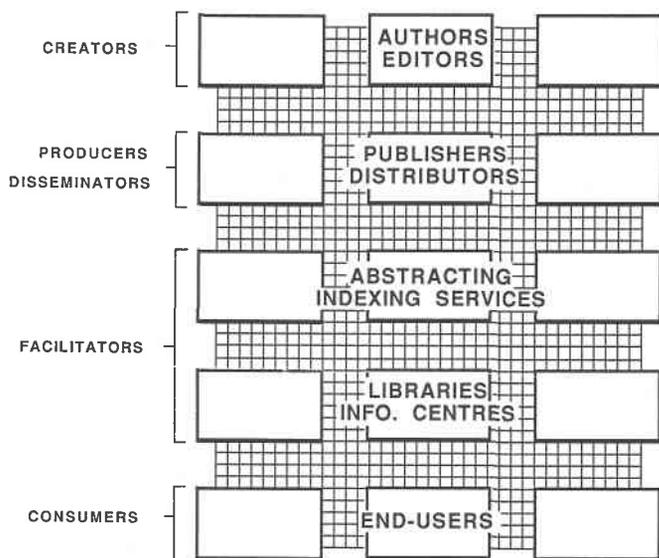


Figure 1.

attractive to the consumer. On the horizontal axis the relationships are what one might call peer relationships, and generally are collaborative or competitive in nature. At the risk of oversimplifying, the relationships within the creators' group can be characterized as collegial, particularly in the realm of scholarly and special-interest publishing, where collaborative authorship and peer review are relatively common. The same sort of collegiality is often evident within the consumers' group as well. Within the library/resource center segment of the facilitators' group the relationships again tend to be collaborative, with a relatively high degree of cooperative venture and resource sharing activity. Among the remaining groups, however, the relationships tend to be more competitive, with proprietary interests taking precedence.

Notwithstanding the limitations of a model of this sort and the risk of overgeneralization, there is one fact that should be self-evident and cannot be contested: to function effectively within the overall system, virtually every member of every group is dependent to a significant extent on members of other groups in the vertical axis, and to a lesser extent perhaps on members of the same group in the horizontal axis. Those dependencies are what make "linking" so vital in the serials universe.

When one overlays the development and application of information technologies on this schematic representation of the serials universe, one begins to see how the technologies introduced over the last twenty years have both supported and constrained the establishment of links between various components of the schema.

In general terms one can discern three distinct technological environments that have tended to form in a strongly horizontal pattern (see figure 2). The first can be characterized as an information processing systems environment, an environment dominated by the conventional information storage and retrieval systems common in libraries and in the database services offered in both the public and private sector. Until recently this information processing environment has been most closely associated with mainframe computer hardware and with local terminal-to-computer or "closed" network configurations. When overlaid on the schematic model of the serials universe, this first technological environment is centered very much on the horizontal axis associated with the facilitators—the abstracting and indexing services, libraries, and resource centers. To some extent, however, it spills over into the producers'/distributors' axis, most notably in the distributors' sector, where serial vendors' systems have developed into relatively elaborate bibliographic systems not unlike those maintained in libraries.

The second environment can be characterized as a word processing environment, associating that term not so much with the technology seen in office systems, but rather with the more sophisticated word processing and computer typesetting systems that have evolved in the publishing industry over the last two decades. The hardware associated with this technology is what one would class as "special purpose," and the systems configurations are again predominantly local terminal-to-computer, or closed networks. The application of this technology, logically enough, centers itself in the publishing sector of the producers'/distributors' axis. However, if one includes the office counterpart to these systems in the word processing

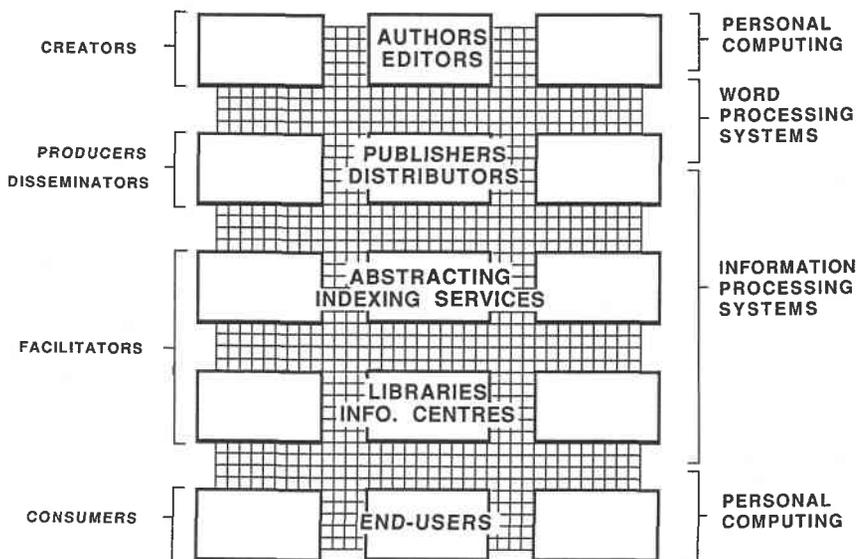


Figure 2.

environment, the boundary extends somewhat into the creators' axis, where systems of this sort are found among the more institutionalized members of that group.

The third environment, and clearly the most recent in terms of development and penetration, is the personal computing environment. This environment is characterized not so much by the type of application it supports (since the range of offerings is almost limitless) but rather by the nature of the hardware, which in itself carries some constraints with respect to the size and power of the application. But even those constraints are being lessened with remarkable speed. In terms of configuration this environment has been largely one of the stand-alone system, but that constraint, too, is rapidly diminishing with the introduction of communicating "firmware" and local area networks. The personal computing environment is aligned most clearly with both the creators' and consumers' axes, where it exists as the dominant technology for the groups concerned. The technology associated with personal computing continues to penetrate all the groups on the vertical axis. For certain organizations within the producers'/distributors' and facilitators' groups, especially the smaller ones, it has become the dominant technology. But when those groups are looked at as a whole, personal computing remains, at least today, a secondary technology, most often used for discrete applications lying outside the mainline business processes.

The strongly horizontal distribution of the technology environment has tended to stratify the serials universe and to introduce barriers to the development of vertical relationships and links between groups. On the other hand, the existence of a common technological environment on the horizontal axis has in many instances served to promote and support the peer relationships that exist between members within a group. Within the li-

brary sector it has been clear for years that the introduction of a common technology has served as a catalyst to cooperative effort. The use of shared computing facilities in the form of bibliographic utilities and the development of common formats for the exchange of bibliographic data have provided a more effective means of supporting cooperative projects and resource sharing than had been the case prior to the introduction of electronic information processing technologies. Programs such as CONSER and ISDS and those supporting interlibrary loan could never have been conceived and implemented on the scale they have achieved without the existence and widespread implementation of those technologies. On a smaller scale one sees the same sort of development within the creators' and consumers' sectors, where the personal computing environment, supported by local area networks and other communications services, is beginning to facilitate collaborative effort between individuals in compiling texts and documenting the results of research in a group setting.

But while the new technologies have tended to reinforce and enhance the links that exist within peer groups, until recently they have had relatively little positive impact on the vertical links in the supply-and-demand chain that exists between the various peer groups. The exceptions have been in those areas where there exists an overlap of the technological environment between groups, such as the one that links the distributors' sector with the various sectors of the facilitators' group. In those instances it has been possible to build interfaces on the vertical axis. But those links that have been developed, such as the order/invoicing interfaces that link library acquisitions systems with vendors' systems, to a large extent have been proprietary in nature and as a result support only limited channels of access between supplier and consumer. For the most part the links that support interaction on the vertical axis exist outside the technological domain. Standards such as the International Standard Serial Number (ISSN), the International Standard Bibliographic Description for Serials, (ISBDS), and standard codes and references to identify serial issues and articles have evolved from a recognized need to facilitate the interchange of information pertaining to serials not only between members of a peer group but across peer group boundaries as well. The impetus for the development of identifiers such as the ISSN, Bidlid, etc., and for initiatives such as the CONSER Abstracting and Indexing Project came largely from awareness that standardization was needed to facilitate communications between supplier and consumer and between the multiple layers of value-added services provided by different sectors within the facilitators' group.

In the last few years a gradual breakdown of the technological barriers that exist both between peer group members and suppliers and consumers has occurred. The catalyst in this process has been the development of a reference model for Open Systems Interconnection (OSI). In basic terms, the OSI reference model provides the necessary framework for developing standard interfaces between computing systems from the most fundamental level—the communications network—right up through the applications level. By defining each level of interface in precise terms, the OSI model has cleared the ground for the development of systems interfaces in a modular way and has served to facilitate a rationalized approach to the fast and complex business of designing protocols that will support communications

and interworking between systems that otherwise would be unable to connect.

Within the serials universe sketched out here we are just beginning to see what OSI can mean in terms of the links that are so vital for supporting the relationships between various organizations and their computing systems. Although we have not yet seen any major implementations geared specifically to serials operations, there have been a number of significant developments on a more general level with clear potential for support of serials applications. The National Library of Canada's file transfer protocol, evolving from the OSI concept, was designed to support the transmission of files of bibliographic records directly from computer to computer via telecommunications lines and has been in full operation for more than a year now. The Linked Systems Project, which is gradually moving into an OSI environment, has also demonstrated the potential for computer-to-computer communications for bibliographic processes. On the resource sharing side there have been considerable efforts made in North America as well as internationally to develop an interlibrary loan protocol. The National Library of Canada supports the implementation of that protocol by several major vendors of library systems in Canada and is working actively with interested parties in the United States to ensure that the protocol meets all the requirements necessary for its acceptance and implementation as a North American and international standard.

The future depicted for us in an open systems environment is one in which the rudimentary links we have forged for ourselves through the use of shared facilities, common communication formats, and proprietary interfaces will be superseded by a much more broadly based network of networks supporting communications and interworking between independent systems. The constraints we currently face due to technological barriers between different sectors of the information community and the limitations that are imposed in choosing one facility or system over another or opting for a particular proprietary interface will be eradicated. Within this totally open environment an individual organization ought to be able to make decisions about the acquisition of systems hardware and software and the purchase of value-added services in a relatively free and nonbinding manner. The systems solutions best suited to an organization's particular needs can be selected on a one-for-one basis without tying that organization to a single manufacturer's hardware or software, enabling the organization to mix and match systems for particular processing needs, and perhaps most importantly, allowing the organization to interact in a kind of "open market," where the choice of suppliers and partners is no longer constrained by the boundaries that currently divide the closed user groups that we have bought into more out of necessity than by choice.

This "promised land" has not yet materialized, but the footings for it have been firmly established in the OSI reference model. The standards organizations are engaged in writing detailed specifications for protocols at all levels defined by the model. Almost on a weekly basis, we see the announcement of new OSI offerings by major communications and systems vendors. Within the publishing and library communities there is active and productive involvement in the development of applications-oriented protocols to support acquisitions, interlending, and cataloging

processes. In the near future there should be a clear evolution toward an open systems environment in the marketplace and in the organizations, consortia, and communities formed to achieve our common goals.

Returning to the schematic serials universe, there is one paradox to be noted with respect to the impact that an open systems environment may have on the relationships that exist between the various components of that universe. From a technological perspective at least, the emergence of a totally open systems environment has the potential of eroding the formal chainlike structure that currently exists between supplier and consumer. The initial signs of erosion already are discernible. The advent of desktop publishing and the emergence of information providers offering not only citation and indexing but also full-text services give us some indication of the way business roles and the traditional relationships between sectors of the information industry are changing. The new technologies effectively provide organizations and even individuals on the supply side of the schema enhanced capabilities for production and dissemination that to a significant extent free them from traditional dependencies on publishers, distributors, and even facilitators as well, allowing them to reach their end users more directly. With the further development of an open systems environment the potential for reaching wider markets directly will become greater. As the new technologies and the implementation of open systems interconnection begin to take hold within the information industry, we may witness not only a change in the way individual organizations apply the linking technologies to meet business requirements, but also a significant shift in traditional business roles and relationships. One could hazard a guess that if current trends continue, the nature of serials publishing and the whole infrastructure that has evolved around the production and dissemination of serials literature will undergo significant changes resulting from innovations in technology between now and the end of the century.

The Limits of a Title Proper, or One Case Showing Why Human Beings, Not Machines, Must Do the Cataloging

Ben R. Tucker

How does a cataloger decide on the division of a string of words into "title proper" and "other title information"? In some cases, no matter how the string of words is presented, the words alone settle the matter, so that it is obvious where the space-colon-space goes:

The province of Agra its history and administration
The province of Agra : its history and administration

Ben R. Tucker is Chief, Office for Descriptive Cataloging Policy, the Library of Congress, Washington, D.C. No copyright is claimed on this article, which the author wrote as part of his official duties as an employee of the U.S. government.

The Polish crisis American policy options

The Polish crisis : American policy options

Bette the life of Bette Davis

Bette : the life of Bette Davis

Nuclear culture living and working in the world's largest atomic complex

Nuclear culture : living and working in the world's largest atomic complex

As every cataloger knows, however, several common types of titles present problems that are not immediately resolved by simply consulting the wording. Consider the title

Managing toward accountability for performance

The title page shows MANAGING on one line and Toward Accountability for Performance on a second line in smaller type. This helps in the decision making by strongly suggesting that the publisher's/author's intention in cataloger's terms was

Managing : toward accountability for performance

Frequently layout and typography assist the cataloger in this way. Unfortunately, this cannot be taken as an absolute, since layout and typography at times lead the cataloger into problems not only of deciding on where the title proper ends and other title information begins, but also of choosing a title proper. Consider these two examples:

title page: LEONARDO DA VINCI in the normal position of a title with Drawings further down

title page: CONFERENCE ON ECOLOGY in the normal position of a title with Proceedings further down

Here the title page shows the name of the person or corporate body in the position of a title, followed lower on the page by a generic term indicative of the content. The ambiguity of the layout and typography may make the cataloger uncertain as to whether the name represents a statement of responsibility and the generic term a title (yet another article may be needed on the topic "choice of title proper"!).

Cases can be viewed also from the standpoint of the opening elements of the string of words. For example, it may be useful to consider how these opening elements, when common, may cause the record to fit in with other records in a particular catalog. Consider that the library has several publications entitled, at least at the beginning of the title, with a popular name or phrase:

The Beatles the authorized biography

The Beatles illustrated lyrics

The Beatles the real story

The Beatles words without music

Obviously, such groups of titles show that the work may not be considered adequately named if the title proper consists only of the opening name or phrase.

In some of these cases the same opening is used deliberately by publishers as the common title of a quasi-series or a quasi-multipart item:

Hamlyn pocket dictionaries, English-Spanish, Spanish-English

Hamlyn pocket dictionaries, English-Italian, Italian-English

Annotated bibliography of natural resource information, Northeastern Wyoming

Annotated bibliography of natural resource information, Southwestern North Dakota

The Bantam great outdoors vacation & lodging guide, Canada

The Bantam great outdoors vacation & lodging guide, Western United States & Alaska

The Bantam great outdoors vacation & lodging guide, Eastern United States

In these cases, a consideration of the larger catalog into which the records must fit might result in the decision to include within the title proper the distinguishing elements coming after the common opening words.

With these illustrations of the problem in its various facets in mind, it is worthwhile to look also at the background of the problem. Before ISBD punctuation it was more easily possible to punctuate after opening words of a title without absolutely excluding following elements in the way the space-colon-space does: a comma, a semicolon, or even the normal colon were low-level separators. Under ISBD punctuation, it becomes a decision of some moment to say that the title proper ends here rather than there. (Incidentally, the decision is not aided by a consideration of the definition of other title information, for the glossary of *AACR2* makes it clear that practically any type of phrase is a candidate for this element, so that one is rarely able to exclude a case on the grounds that the secondary phrase is not other title information.) One recognizes at the same time that there was an overriding need to create out of the matrix of title information the two definite subcategories of "title proper" and "other title information," so that ultimately the ISBD cannot be faulted. As long as we want to limit a title to the title proper in order to manipulate cataloging data to access efficiently records or their elements, it is necessary to accept the categorization provided by ISBD. Nonetheless, the matrix on which the categorization was brought to bear, ordinary titles aside, is basically ambiguous and otherwise resistant to definition, as aesthetic or commercial aims of authors and publishers produce nondefinable data. Additionally, at least in some cases, hindsight says it might have been better to choose some mark of punctuation other than the colon as the division between title proper and other title information. One cannot help but note that the normal colon, as printed on many title pages, at times serves a very significant purpose, strongly indicative of a particular meaning:

title page: THE CITY OBSERVED: BOSTON [Boston in larger, blacker type, on a new line] A Guide to the Architecture of the Hub [further down, in smaller type]

Here, looking at the title page, the meaning is quite clear—"Boston, the city observed." In a different order, with the comma substituted necessarily for the colon (if one does not decide that "Boston" is other title information!), the meaning is somewhat obscured:

The city observed, Boston : a guide to the architecture of the Hub

With this background, using the types of title data illustrated, the Li-

brary of Congress in the past documented one or more of the ideas suggested here in an attempt to steer our large group of catalogers in a preferred direction, the preference being for longer rather than shorter titles simply because once divorced from the remainder of the record the longer titles tend to pin down the name of the work unambiguously. Consequently, a rule interpretation formulated shortly after the introduction of ISBD punctuation in the rules began by noting that judgment had to be followed but ended by asking the cataloger to "Include the word or phrase in question as part of the title proper if (1) it comes after a very brief title that is common sounding, and (2) its inclusion produces a more distinctive title." Later editions of the interpretation elaborated on this, particularly in the area of examples. Catalogers naturally rely on examples (no matter how often theoreticians claim they are not prescriptive). With this particular difficulty of deciding on the length of the title proper, our catalogers especially tended to follow the examples as a definitive guide (in quicksand, however, might one not reasonably cling to any solid ground?). Thus, instead of using judgment for the particular case, the staff tended to settle it according to how similar it was to one or more of the examples. Also, during the period when the documentation favored lengthening brief titles in ambiguous cases, the staff tended to lengthen all brief titles, i.e., even in cases that unambiguously presented succeeding words as other title information. This experience was certainly not universal but frequent enough to warrant one more attempt at improving the interpretation. So we removed all the examples and all the specific advice, leaving only the recommendation of judgment. Finally, at the point of revising the 1988 edition of the LCRIs to make them conform with the 1988 revision of AACR2, it did not seem useful to retain an interpretation that said only to use judgment, and thus there is at present no rule interpretation addressing the problem.

It is useful to consider certain aspects of machine searching as one of the several activities affected by the results of catalogers' decisions on titles proper. In such a consideration it becomes immediately apparent that different systems embody different searching techniques, e.g., use of keyword searching, compression keys, or a combination of both. Designers of systems may even implement the same technique differently: compression keys used for searching titles may vary, for example.

To illustrate, at the Library of Congress we have available a search of titles via compression keys. The key is based on a consideration of the first three letters of the first word of the title followed by the first letter of the next three words for a total of six characters. Thus, the title "The Don Juan theme, versions and criticisms" is accessible by the key "donjtv" (the initial article is ignored in formulating such searches). If, however, the cataloger judges the title to be "The Don Juan theme : versions and criticisms," the title becomes inaccessible through a title key as described above unless the ambiguities of titles as presented on title pages and as interpreted by catalogers are compensated for, where possible, by the searching system itself. In our system we found it possible to help in this way by building two indexes when there are no more than three words in the title proper as indicated by the space-colon-space: one index is built on

the words preceding the space-colon-space and one on the words extending beyond the space-colon-space, so that a search submitted using either the key "donjt" or "donjtv" is successful. At least in these cases it does not matter what the cataloger judges the title proper to be. We have not taken this "double" indexing further, however. For example, in the cases when titles proper extending to four or more words are created by the cataloger, we did not also build an index based on four words, since we judge the need for this to be not nearly so great as that of very short titles proper (i.e., titles proper created by inserting the space-colon-space after one, two, or three words only). Thus, considering solely our own system, very short titles are not a great problem—indeed, we get two chances to find them. It should be clear from the examples given in preceding paragraphs, however, that decisions on titles proper cannot practically be driven exclusively by a consideration of machine searching, since there exist multiple systems.

Is there some other consideration that would help? It seems unlikely. As we look closely at our rules and their ISBD background, we cannot help but note that the rules for bibliographic description, no matter whether one considers an up-to-date tool such as *AACR2, 1988 Revision* or an antediluvian one such as the *Rules for Descriptive Cataloging in the Library of Congress*, have never been brave enough to tackle such a question. These rules blandly address punctuation and other "editorial" matters (e.g., capitalization), on the assumption that the cataloger has decided on the title proper before coming to the rule. Writers of rule interpretations have been more foolhardy and so have attempted to give catalogers guidelines for deciding on the title proper, although as indicated above, the results are usually unsatisfactory. Even these individuals, however, have laid heavy emphasis on catalogers' use of judgment when providing some rules of thumb. It might be useful to summarize the possibilities for "rules of thumb":

1. Use the punctuation in the source as the guide, saying that a mark of punctuation is a break and inserting at that point the ISBD space-colon-space, instead of the mark found. These examples showing found punctuation in the middle of obvious titles proper show why such a rule of thumb will not work:

Sincerely, Willis Wayde

A survival manual for women (and other) historians

Directory of hotels; motels; bed-and-breakfast inns

Oh! Pascal!

2. Use the typography of the title page, treating a change in typography as a break marking the end of the title proper. Examples are numerous. One only has to think of ordinary titles such as "History of [name of country]," in which the typeface for the name of the country is routinely much larger than that of the opening phrase, yet the "of" construction prevents ending the title at that point.
3. Use the appearances of the title on the cover, in the running title, etc., as guides when the title page is ambiguous. This is actually a reasonable notion, but it cannot function as a "rule," for many items do not

repeat the title in this way. One ends up by considering this notion along with others in the process of applying judgment.

In conclusion it is necessary to state the obvious: that normally the cataloger thinks about the data found in the chief source and makes basic decisions on what to transcribe and where before turning to the rule book, if necessary, for detailed instructions as to punctuating or otherwise formulating the transcription. If the thinking and deciding referred to ought to be settled for the cataloger by the rules—for important uniformity, easing the cataloger's burden, or whatever reason—then the rules should stipulate the cataloger's actions without allowing much judgment, if they can. This is the rub in the case of deciding on the length of the title proper, there being no stipulation possible without frequently causing worse results than those produced through use of individual judgment.

Involvement in Bibliographic Instruction among Technical Services Librarians in Missouri Academic Libraries

V. Lonnie Lawson and Charles E. Slattery

INTRODUCTION

A great deal of professional attention is being paid to the concept of bibliographic instruction. The literature reveals studies that focus on the various forms bibliographic instruction may take, scenarios for its systematic implementation, and tools for measuring its effectiveness. Studies that place bibliographic instruction within a more holistic framework, specifically those which examine the pros and cons of involvement by technical services librarians in public services activities, are far fewer in number.

Although academic librarians may not view bibliographic instruction universally as the exclusive province of public services/reference librarians, the reader is no doubt familiar with some of the arguments, rationalizations, and generalizations often advanced by both public and technical services librarians regarding this issue. Our purpose in conducting this survey was to determine the degree of involvement of technical services librarians in bibliographic instruction in selected Missouri academic libraries, the extent of compensation by public services librarians in technical services activities, and the opinions of members of both divisions toward such activities.

V. Lonnie Lawson is Science and Technology Librarian and Associate Professor, and Charles E. Slattery is Humanities Librarian and Associate Professor, Ward Edwards Library, Central Missouri State University.

METHODOLOGY

In the fall of 1987 a questionnaire was prepared and sent to technical services and public services librarians in thirty-two academic libraries in Missouri. The survey had two parts. Part I was to be completed by the person designated as the technical services coordinator for that particular institution. This part of the questionnaire was designed to elicit factual information, especially numeric data regarding technical services staff size, degree and kind of involvement in bibliographic instruction, and the extent of reciprocal involvement by public services librarians in technical services operations.

Part II of the survey consisted of three pages of questions soliciting opinions from the technical services coordinator and other technical services librarians as well as the person designated as the coordinator of public services. The questions pertained to the involvement of technical services librarians in bibliographic instruction.

Questionnaires were sent only to those Missouri academic libraries with at least one professional librarian serving full time in a technical services position. Packets were mailed to the person designated as coordinator of technical services, who had agreed in advance over the phone to distribute Part II of the questionnaires to all technical services librarians and the public services coordinator.

SURVEY RESULTS

Twenty-five (78%) of the 32 Missouri academic libraries participated in the survey. The libraries had 61 full-time and 3 half-time positions currently filled by technical services librarians. The greatest number employed by any one library was 11, and 12 libraries employed only one technical services librarian.

Eight of the 25 libraries engaged technical services librarians in some form of bibliographic instruction, although the perceived definition of bibliographic instruction varied from respondent to respondent. (For example, some respondents apparently do not consider activity at the public services desk to be bibliographic instruction.)

The largest number of technical services librarians was involved in working the public services area/reference desk in the evenings and on weekends. This type of involvement is limited to one or two people and varies from one to twenty hours per week.

Use of the Library classes are offered in 14 of the institutions surveyed; however, only one technical services librarian was involved in teaching them. Four institutions reported technical services librarians teaching library science courses other than the Use of the Library class, such as Cataloging and Classification, Resources in Religion and the Humanities, Reference, Administration, Book Selection, History of Books and Printing, Children's Literature, and Freshman Composition. Four libraries reported that technical services librarians were involved in the past.

Library tours were conducted by technical services librarians in 12 libraries. In decreasing order of frequency, the types of tours given were General Tours, Freshman Rhetoric/English classes, and specialized subject tours. The average length of time reported for each tour was 43 min-

utes. Of the 13 libraries in which technical services librarians did not presently conduct library tours, 6 reported participation by technical services librarians in the past.

Five technical services coordinators reported other activities in their institutions performed by technical services librarians that fall within the framework of bibliographic instruction. Among these were: (1) offering practicums to library science students assigned to a technical services department, (2) teaching patrons how to use NOTIS, *LCSH*, the card catalog, etc., (3) ad hoc group planning followed by staff and public training sessions on the use of the catalog, and (4) computer searches of all major databases. Assistance offered by technical services librarians in support of bibliographic instruction included writing chapters or sections for handbooks, creating handouts and assignments for Use of the Library classes, identifying technical services personnel with special expertise to serve as technical services resource advisors for various bibliographic instruction activities, and instructing student workers.

Twelve libraries indicated that technical services librarians have been engaged in bibliographic instruction at some time in the past. In addition to tours, reference desk duty, and teaching, other types of bibliographic instruction performed in the past were library use presentations in freshman English classes, displays, card catalog and periodical index use instructional sessions, bibliographic verification, and special seminars for specific classes utilizing videotape.

Ten of the 24 technical services coordinators reported that public services librarians reciprocated for technical services librarians' participation in bibliographic instruction by performing duties/tasks in the technical services area, such as processing activities in the acquisitions and cataloging areas. Among the types of duties reported were pre-order searching of book orders (searching card catalogs, online catalogs, or OCLC), binding preparation, security stripping of books, gathering and sending items to the technical services area, filing, and bar coding. Respondents indicated that many of these activities were performed only on an emergency basis, when a library suddenly found itself shorthanded, or in libraries where optional summer contracts affected the work flow.

Five of the respondents indicated that public services librarians have been involved in such reciprocal activities in the past. None of the libraries required public services librarians to work in the technical services area to compensate for the time technical services librarians gave to bibliographic instruction.

In answer to the inquiry of whether the public services area librarians provided help in automation activities, 11 responded yes and 11 no. The types of assistance mentioned were involvement in planning and decision making, discovering and reporting errors, determining circulation parameters, providing priorities for system enhancements, writing menus and help screens, providing user guides, training students, and performing OCLC work.

CONCLUSION

The survey findings revealed that Missouri academic technical services

librarians do not disagree across the board with their colleagues in public services regarding the appropriateness of participation in bibliographic instruction. In essence, the "us versus them" (technical versus public) dichotomy did not materialize. Respondents where technical services librarians currently participate in bibliographic instruction were more positive toward technical services involvement in bibliographic instruction than the respondents where technical services respondents do not participate in bibliographic instruction. Among technical services librarians who teach courses in addition to library use classes, the attitude toward bibliographic instruction involvement was overwhelmingly positive.

Results of the survey seem to show that the use of technical services librarians in bibliographic instruction is gaining acceptance in Missouri academic libraries, but there are substantial issues to be resolved. For example, (1) should additional staffing be required in technical services areas as compensation for technical services librarians' involvement in bibliographic instruction? (2) in the event of reciprocal participation in technical services operations by public services librarians, will the latter be able to utilize their expertise in professional activities? (3) should there be a retraining period, and if so, of what duration? and (4) will the end result justify the costs?

By asking such questions we set the stage for informed decision making about the feasibility and practicality of a redefinition for technical services librarians' activities in the area of bibliographic instruction.

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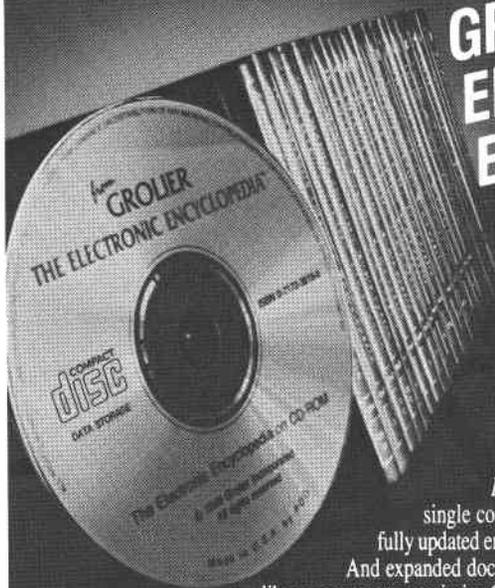
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***LRTS'* Subsection**

Shall We Throw Out the Technical Services—and Then What?

D. Kathryn Weintraub, Editor

In the preceding papers of this conference, K. Gapen presented a view of the future where today's accepted goals for libraries will merge with services made possible by a technology that is not just new but qualitatively different—a future where our goals must be redefined within the framework of new parameters of thought. J. Rapp emphasized the need to recruit librarians for this future who are not only competent but who also have the characteristics that will enable them to adjust and develop in complex and fluid environments. Here, L. Kershner suggests specific procedures for implementing change in libraries. She draws upon her extensive experience to suggest some specific procedures for training staff to undertake new responsibilities.

Training People for New Job Responsibilities: The Lesson Plan

Lois M. Kershner

As a result of my decade of experience in implementing various automated systems in libraries, I have come to realize the importance of quality training in an environment of change. Presented here is a training philosophy and techniques that are effective elements of a training program.

Training for the use of an automated system starts long before the system is delivered to a library. Staff should participate in decisions about how the system will be used and how it will change workflow and procedures. Effective managers will take the time to solicit and evaluate possible reactions of individuals, clarify perceptions, and reduce personal risk. One

way to do this is to solicit questions and distribute answers, as was done by one library introducing an inventory control system through a booklet entitled, "All You Wanted to Know about the Automated Circulation System But Were Afraid to Ask."¹

The most intensive training occurs when the system arrives and staff actually begin to use it. The training techniques discussed here assume a new system is being introduced to a group of people simultaneously, although the techniques apply in one-on-one or ongoing training situations. Starting with a philosophy and understanding of how people learn is critical for designing the components of a training program.

Educators and researchers tell us that people learn in a variety of ways. The sensory channels through which people take in information play an especially important role in learning. These basic senses are *sight*, *touch*, and *sound*. Sometimes learning/training is translated into strategies, such as formal education, communication, or participation. Whatever the strategy, teaching takes a lot of reinforcement, repetition, encouragement, and patience.

The visual learner remembers best what is seen—by watching a demonstration, by reading. The kinesthetic learner needs to involve muscles—by working at a terminal to observe the cause and effect of a command, or by taking notes. The auditory learner depends on ears and hearing to absorb information—by listening to the logic of an instruction as it is described.

People learn in different physical environments. Some learn best in a group setting, where discussion and the exchange of ideas flourish. Others are reluctant to participate in groups for fear their lack of understanding or speed in grasping a concept will embarrass them. Some people think best in a quiet, isolated space. The teaching/learning techniques and environments cannot be compartmentalized, however, since most people learn through a mix of them. The training program is therefore planned to offer all types of opportunities for learning.

To reduce personal risk a supportive atmosphere is needed, where encouragement is constantly given, mistakes pointed out and corrected openly. People should learn it is okay to be wrong, and that being wrong is part of the learning process. In adult education we are not competing either with others or for an A+ grade. We are learning a new routine, slowly building on the small amount that we grasp until those small building blocks turn into a full structure. And just as with the construction of a building, the complete form does not occur overnight nor by the work of a single individual. It takes the hammering of many nails, and the cooperation of a team of people planning and working together to fulfill the ultimate task of successful use of a new system.

The training program, like the building plan, envisions the overall job, then breaks the large task into components. In a formal curriculum, this is called the "lesson plan." To construct a lesson plan, some person(s) must understand the automated system being implemented as well as the library functions it serves. This full vision is needed in order to break the task into components each of which could be a separate training session. For example, if the new system is for automated circulation control, the components might be the functions to be performed, e.g., charging out books, placing

holds, paying fines, renewing books, etc. The full definition of the lesson plan is created long before the hands-on training job begins.

When blocking out the individual sessions one must take into account the length of time a person can concentrate—usually no more than two hours at a time. However, three-hour sessions can be successful with a healthy (twenty-minute) break in the middle. In this way people walk away from the system, forget the thought pattern that they were understanding while involved, then reapproach the system to realize that they can indeed remember the earlier lesson. I have heard people say to a trainer, "I understand it now, but the minute you leave, I will surely forget!" Taking a break, with immediate review upon returning, reinforces the learning process and begins building a sense of confidence.

The step-by-step content of every component of the lesson plan should be carefully outlined, with written examples for each step and a list of aids or supplies. Examples are particularly important for a new system because often even the trainer does not have much experience with it. Furthermore, these examples of system use must often be constructed prior to the session so that they are ready for experimentation during the session.

Preparing the training program, planning the lesson, experimenting with the system, and constructing examples takes hours of time. This is only the beginning: there are worksheets; quizzes too!

There must be time for formal training and practice in addition to what is already a full-time job. Eliminating some tasks and assigning other persons to cover necessary tasks is the responsibility of management. If such reassignments are not made, not only will staff fail to accomplish their expected jobs and become demoralized; they will also fail to set aside the necessary time for practice and homework.

Practice! Homework! Yes, indeed! Repetition and structure are important elements of a lesson plan. They lead to the description of the practical components of a training program based on exploiting the three senses used for learning: sight, touch, and sound.

First sight! Use of vision can take many forms, in that people learn by reading printed words, and also by watching actual performance of a system. Translate this into the training techniques of documentation and demonstration.

Some people learn best by reading through instructions. Most people, however, need straightforward "how to" description of the specific steps involved in a library function. Often the trainer must write several subsets of the vendor's documentation for local use before training begins. I personally prefer a procedural document in a visifile format because it is easy to break the document down into small components, and it is easy to update the document.

Some people learn by taking notes in order to translate instructions into their own form of organization. However, people taking voluminous notes are often so involved in note taking that they do not hear all that is said, do not see all that is demonstrated, and delay the group as a whole. To remedy this, I place easy "how-to-do" instructions beside each terminal where they can be referenced as part of the demonstration and used by the terminal operator. What is especially helpful to the kinesthetic learner, how-

ever, is a form of note taking that consists of writing down basic commands.

All too often the only component of training is demonstrating how a system works. This only shows how well the demonstrator knows the system. As a trainer, your job is to ensure that the training group can demonstrate to you what *they* have learned. Therefore after a demonstration, have the training group perform the task (notice the mix of sight with touch, or seeing and doing, the one reinforcing the other). Each demonstrated task should be limited so that a person can successfully remember all the steps. Explain the logic or the "why" of a routine. The broader understanding will help people grasp the way a small step fits into the overall system.

For the trainer to be able to see what people are doing, the group must be small, usually no more than six or eight people, with two per terminal. This requires pre-planning for a quiet space with space and electrical outlets for at least three terminals. The two people at a terminal should switch places periodically. In this way each has a chance physically to perform the routine, as well as sit back to watch and understand the logic of the function. Switching places eases the tension that a person may feel when asked to do something that is foreign or to learn in a way that is not his or her most effective.

Do not let the person watching touch the keyboard; but do let the two people help each other. As trainer, never touch a keyboard; make the person at the keyboard do the work (unless the person is really in a mess for which an explanation would be disruptive). And ask that, while you are giving instructions to the group as a whole, all other talking cease. Also ask that the group stay with your training agenda.

Private practice is necessary for review and reinforcement through repetition. Practice takes structure and scheduled time. At least half the time of the formal training session should be scheduled per person for review. Each person will need worksheets after each formal session to provide structure for such a review. The worksheet is a series of exercises ensuring that all points of the formal session are covered. It provides a tool for people to use when working quietly, thinking through the system for themselves, and learning to use the documentation. The sheets may require written answers or they may be system exercises where the work is reviewed online such as a cataloging revision file.

Have the worksheets turned in like homework. They provide the trainer with another opportunity for seeing that people have been able to do the tasks or understand concepts. They should be corrected immediately and returned as reinforcement of the learning process. If errors occur, the weak points are reviewed at the next session. People feel comfortable getting them back for they are another form of training document that can be referred to, and a document that is in their own writing.

Certainly the demonstration of a task involves hearing. But another successful auditory technique is a question/answer routine—forty questions—or to some, the big quiz! This review toward the end of the lesson plan reinforces again what has been learned, but this time not by seeing, or doing, but by talking/hearing. For some, the pressure of what may be regarded as a test is necessary structure for learning.

The questions give an opportunity to talk about concepts, logic, and the practical application or way a system is used. The use of the system is described in terms of answers to practical questions, what if . . . , and how would you go about . . . ? This is the time to review all the work forms that will accompany use of the system. The question/answer routine works well in a group session, with the documentation at hand and the system available for prompting. Each person picks a slip with a question and works through the answer to the question. Then in turn each person in the group reads the question and gives his or her answer, while the others listen to confirm that the answer is correct, or add an alternative solution. Depending on the size of the group each person might have only four or five questions, so the pressure is not so great for any one individual. The advantage of presenting the information orally is that it is shared by the group as a whole. The session helps establish a supportive group, and usually demonstrates at the end of a training session that a great deal has been learned—the ultimate objective of the trainer.

Once the system is in place, training does not stop but takes different forms. The dissemination of information may be in the form of a periodic newsletter or through staff meetings. Retraining may concentrate only on tricky areas, or may introduce refinements or short cuts. As people join the staff, all of the written materials that have been prepared for the group sessions can be used with individuals.

The written materials can be used by other trainers, knowing that a quality training program will provide the means for individuals to learn in the ways they learn best. Materials include the complete lesson plan broken down into individual sessions, each with outline and detailed examples, worksheets for structured review, “how-to” procedural description, and questions/answers for the practical application of the system. A well-planned training program takes time to prepare; it takes the commitment of library management. But training time is time well spent.

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Richard D. Johnson, Editor

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Letters to the Editor

From Nancy B. Olson, Mankato State University, Mankato, Minnesota:

Melissa Laning chose to compare LC's own publication of their AACR2 rule interpretations [*LRTS* 33:197-198 (April 1989)] to the compilation by Sally Tseng published by Scarecrow Press. Laning ignored the valuable contribution of Lois Lindberg, Alan Boyd, and Elaine Druessedow of Oberlin College Library. The Oberlin people have been producing their quarterly cumulation since 1982, at an annual subscription price considerably lower than that of LC. Their cumulation now includes (with LC permission) the index from the LC publication. The Oberlin compilation has been timely and extremely useful to catalogers.

Yet another route to the rule interpretations is through my annual cumulative index to the *Cataloging Service Bulletin*, now available from Soldier Creek Press for bulletins no. 1-44. This indexes all rule interpretations by rule number. It also indexes all LCRIs by terms and phrases from the rule interpretation itself.

Melissa Laning replies:

In my review of the *Library of Congress Rule Interpretations*, I chose to

limit comparisons to only one other title in order to give greater depth to my critique of the LC publication. I chose Sally Tseng's work as the basis for comparison because it was recently reviewed in *Library Resources & Technical Services* and I am quite familiar with it.

However, Ms. Olson is absolutely correct in stating that the Oberlin publication and her own should have been mentioned. I thank her for pointing out this omission.

Book Reviews

Cataloging Microcomputer Software: A Manual to Accompany AACR2, Chapter 9, Computer Files. By Nancy B. Olson. Englewood, Colo.: Libraries Unlimited, 1988. 267p. paper, \$27.50 U.S.; \$33 elsewhere (ISBN 0-87287-513-X). LC 88-8457.

A Manual of AACR2 Examples for Microcomputer Software with MARC Tagging and Coding. 3d ed. By Nancy B. Olson. Manuals of the Minnesota AACR2 Trainers. Lake Crystal, Minn.: Soldier Creek Press, 1988. 75p. paper, \$17.50 (ISBN 0-936996-34-X).

Librarians faced with the challenge of cataloging microcomputer software may find Olson's two manuals helpful

adjuncts in applying AACR2 Draft Revised Chapter 9 rules for computer files. *Cataloging Microcomputer Software* is by far the more comprehensive in scope and treatment. The first half covers the history of cataloging software with an excellent annotated bibliography, advice on storage and use of software, a detailed presentation of the rules (description and access), and an explanation of MARC codes and tags specific to this material. Included are lists of computer-related subject headings (Sears 13th ed. and LCSH 9th ed. and updates through Sept. 7, 1987) and classification numbers (LC and Dewey 004-006 schedule). Use of the lists, however, supposes access to the tools involved and some knowledge of their application.

The last half of this text is devoted to examples (100, to be exact) that include mostly commercially available software packages, along with some shareware and freeware; the majority are monographs, although some serials, kits, games, and "In" analytics are represented. Apple and Macintosh packages predominate, as Olson states these were the most readily available. All examples are presented in card format, and include main and added entries, LC and Sears subject headings, and LC and Dewey classification numbers. Additionally, some examples illustrate MARC coding and tagging for OCLC input. The examples are numbered but do not appear to be in any particular order or arrangement. Reference to a specific title requires flipping through the section, as there is no list or index of the titles. Olson has very nicely captured the chief source used in cataloging her examples. Other sources used to complete the description are not shown; these would have undoubtedly doubled the size of this section, but would dispel questions as to how some of the information was derived. A number of oversights were found (e.g., in example 48 accompanying material is indicated in the physical description but not given; in examples 6, 12, and 38 some of the system requirements were

omitted in the notes). A glossary and an extensive bibliography complete the text.

A Manual of AACR2 Examples for Microcomputer Software with MARC Tagging and Coding is in its third edition. This, as well as earlier editions, has been published for members of the Minnesota AACR2 Trainers. It is limited to descriptive cataloging and includes twenty-four monographic titles, a number of which are the same or earlier versions of titles that appear in the larger text. Examples are given in card as well as MARC coded format. Library school students who are doing practice inputting of bibliographic records for this material may find this a handy tutorial.

At present, Olson's two software cataloging manuals are the most current devoted to this topic. However, users need to be aware that the final version of Chapter 9 has since been published with some minor modifications in the revised edition of AACR2. Dewey 20 has also been published, as well as more recent updates of LCSH headings.—Ann M. Sandberg-Fox, Washington, D. C.

Binding Terms: A Thesaurus for Use in Rare Book and Special Collections Cataloguing. Prepared by the Standards Committee of the Rare Books and Manuscripts Section (ACRL/ALA). Chicago: Association of College and Research Libraries, 1988. 37p. paper, \$10; \$8.50 members (ISBN 0-8389-7210).

Provenance Evidence: Thesaurus for Use in Rare Book and Special Collections Cataloguing. Prepared by the Standards Committee of the Rare Books and Manuscripts Section (ACRL/ALA). Chicago: Association of College and Research Libraries, 1988. 19p. paper, \$9; \$7 members (ISBN 0-8389-7239-X).

It is thesauri like these that make the MARC format workable for rare book and manuscript collections, and the au-

thors are to be congratulated for their efforts and their products. That said, we can now question and quibble. But first an explanation.

These two thesauri, and others in the series, are terminology constructs designed for use in the MARC record, specifically for field 755, which every experienced cataloger recognizes as "Added Entry—Physical Characteristics." (The introductions of these volumes assume a lot, including a full understanding of the significance of "755" on the part of readers.) Within 755, the terms are to be used for Subfield #1 ("access term"), and the thesaurus in use is to be identified in Subfield #2 according to a predetermined code (rbbin and rbprov respectively). This impenetrable coding is not the fault of the thesauri; we are all aware that MARC is not a pretty thing.

Although the thesauri are designed for the rigid conditions of the MARC structure, surprisingly enough the actual application of terms allows much discretion on the part of the cataloger. The use of the field itself is voluntary, and when it is used with these thesaural terms, it can include geographic and temporal qualifiers. Furthermore, the degree of specificity is a matter for local control. This combination of structure and discretion would seem to assume that the field will be used for searching *within* institutions, but it may not be effective for searches *across* the national databases. One senses throughout the explanatory material a compromise between the requirements of single institutions and those of the field as a whole. While these thesauri cannot solve this old conflict in the rare book and manuscript world, they make a noble and largely successful attempt at standardizing the representation of judgment calls.

One succeeds rather more than the other, and that difference is due largely to the character of the subject matter being controlled. First the simpler and more successful case. Provenance evidence is a vague concept, here defined as referring not only "to former own-

ers in the legal sense, but also to any who may have had temporary custody of the material (such as auction houses or library borrowers) and have left their mark in some way on it" (p.1). Such a topic begs for order and for stabilization of terminology. Both are provided here, first in an alphabetical list, and then in a corresponding hierarchy of terms. (This dual presentation is present in both thesauri.)

What is not made clear in both thesauri is that the hierarchical presentation actually consists of several facets, and the relationship of a term in the alphabetical list to a specific facet is not indicated. One must really guess which facet the term relates to from meaning, but that is not always a simple matter since the various facets treat closely related concepts. This problem may not be serious, since MARC is not really hospitable to faceting anyway (except for date and place), but it is a stumbling block in using the documents. Since the authors took the trouble to work out a hierarchy, one would like to see more syndetic structure to make full use of the constructs. One would also like to see in both thesauri preferred terms in bold typeface—again to make use of the document easier. Overall, the cross-referencing in both thesauri is carefully done, and the text is easily legible. The typeface of the binding terms thesaurus is particularly pleasant to read, and one expects that it will set the standard for the next few thesauri in the series.

The second thesaurus considered here, *Binding Terms*, suffers from a defect inherent in verbal constructs developed to control visual and physical material. The words are codes for the images, and in this case the words are not enough. Even if one were to consult the cited works, that would still not be enough, since many of those reference works also use only words and not pictures to describe the binding in question. Scope notes and definitions are too few. The work cries out for illustration. Apart from this defect—a fairly fundamental one—the work is well thought-out, and the decisions on terms

are sensible ones. One regrets seeing the more colorful terms giving way to descriptive words (e.g., Limoges work bindings to Enamel bindings, and in the companion thesaurus, Grangerized copies to Extra-illustrated copies), but at the same time the reader must applaud the authors' good sense in these decisions.

Both volumes are constructed with care, include straightforward introductory matter (some of it identical), and show sensitive attention to terminology itself. They are, however, unduly modest in conception and only partly suitable for the technological environment in which they will be used. Both would be strengthened, for example, by the addition of numerical coding. With this addition the terms drawn from them could be used in searches that move up and down their hierarchies. With such a numerical coding system, the limitations now existing because of variations in specificity would be overcome. (While such searching is not yet generally available, it is possible and it will probably soon be commonplace.) These and the other thesauri in this distinguished series would be strengthened by features that would encourage their use in modern automated applications. The intellectual work represented here is fine, and it deserves wide and technically sophisticated distribution.—*Deirdre C. Stam, Syracuse University, Syracuse, New York.*

Media Access and Organization: A Cataloging and Reference Sources Guide for Nonbook Materials. By Carolyn O. Frost. Englewood, Colo.: Libraries Unlimited, 1989. 265p. \$26.50 U.S.; \$32 elsewhere (ISBN 0-87287-583-0). LC 88-27302.

The purpose of this work, as stated in Frost's preface, is to "offer a comprehensive approach to the organization and access of non-book materials." The book succeeds in meeting this very worthy goal. It is a clear, concise, and readable guide to nonbook materials and the cataloging rules that govern

their organization. The author is quick to point out that this book, like *AACR2* and *MARC*, is "dynamic in nature," and its content and examples will need to change due to future updates, revisions, and interpretations.

The author cannot be faulted for not redefining the term *nonbook* in this guide. Instead, she straightforwardly indicates that the materials included correspond to the formats covered in *AACR2* under chapters 3 (cartographic materials), 6 (sound recordings), 8 (graphic materials), 7 (motion pictures and videorecordings), 9 (machine-readable data files), 10 (three-dimensional artifacts and realia), and 11 (microforms). Differences between *AACR2*, *AACR2* revised edition, OCLC procedures, and LC (Library of Congress) practice are discussed. At the end of each chapter are review exercises in (*AACR2*) rule application, and the answers include the *AACR2* applicable rules, OCLC *MARC* tagging, and the catalog card display. Each chapter also includes a bibliography and a descriptive list of reference sources. These reference sources range from LC manuals to ALA publications to dictionaries and encyclopedias, and these sources are provided as additional aids in unraveling the nonbook mystique.

An added bonus is the discussion of classification schemes, subject access, and (shelf) organization given in the chapters on cartographic materials, sound recordings, graphic materials, computer files, and microforms. Although the discussions are brief, they cover the highlights of various classification and organization schemes and provide the reader with an introduction to the myriad methods that are in existence for coping with nonbook materials.

The introduction is a good foundation for the nonbook novice. A general overview of nonbook issues is given here, and topics such as the history of cataloging codes and their impact on nonbook materials, catalog versus shelf access, separate versus integrated

shelving, and a definition for the term *kit* are mentioned. And developments such as MARC format integration and its impact on cataloging nonbook materials are also discussed.

All in all, the title is a useful guide for nonbook veterans as well as for newcomers. The lists of reference sources alone make the title useful; the cataloging illustrations and discussions make it invaluable as a day-to-day tool. *Media Access and Organization* should be a part of every technical services/processing department.—Denise A. Garofalo, *Mid-Hudson Library System, Poughkeepsie, New York*.

Contemporary Technology in Libraries. Ed. by Beth M. Paskoff. Issued as *Library Trends*, v.37, no.3 (Winter 1989). Champaign, Ill.: University of Illinois Graduate School of Library and Information Science, 1989. p.256-384. paper, \$15 plus \$1 postage (ISSN 0024-2594).

In her introduction, Paskoff implies that this issue is geared toward librarians who have had little contact with current innovations in library technology. These nine articles are primarily (as their bibliographies attest) synopses of recent articles on library automation that have appeared in library and information science journals. Anyone who has managed to keep abreast with only a few of the popular library news publications will not likely find any new revelations here. But for those who have been too busy or reluctant to familiarize themselves with the newer technology, this issue of *Library Trends* is a good place to start. The articles are clear and concise. Paskoff has selected contributors who are knowledgeable and experienced writers.

In the lead article, William Saffady gives a historical overview of the nature and methods of the initial applications of automation to library technical and public services. Also of a historical nature is Danny Wallace and Joan Gigglerano's article on microcomputers in libraries. They find microcomputers

have been used mainly for task operations and record-keeping with little attention given to providing information to patrons. They also see a need for library schools to concentrate more on computer literacy. This theme is taken up in a different fashion by Loretta Caren. She advocates more extensive instruction of library patrons on how effectively to use information technology.

Of a more technical nature are Pamela Andre's article on optical disk production and application in libraries, Steven Brown's coverage of the mechanics of telefacsimile, Becki Whitaker's critical review of electronic mail vendors, and F. W. Lancaster's paper on online (and interactive) access to electronic publishing. Probably of most interest to LRTS readers will be Paskoff's article on the library as a supplier of software. In addition to giving leads of sources of software reviews, she has some advice on cataloging, processing, and circulation of software. The issue is completed with Susan Martin's analysis of the influence of current technology on the library as an organization, its budget, planning process, and staffing. From here the novice in contemporary technology in libraries should go on to Walt Crawford's *Current Technologies in Libraries: An Informal Overview* (G.K. Hall, 1988), which offers a more in-depth and critical look at the impact of technology on library operations and services.—Richard E. Asher, *Indiana State Library, Indianapolis*.

Collection Development Policies for College Libraries. Comp. by Theresa Taborsky and Patricia Lenkowski, with the assistance of Anne Webb and Lisa Lewis. CLIP Note #11. Chicago: College Libraries Section, Association of College and Research Libraries, American Library Assn., 1989. 181p. paper, \$23.95; \$19.95 members (ISBN 0-8389-7295-0).

This compilation of policies is a welcome addition to the literature of col-

lection development and is far more helpful and sophisticated than *Collection Development Policies* (CLIP Note #2), issued in 1981. The book is divided into five sections, preceded by the results of the 1988 Clip Note survey, itself quite interesting reading.

Six complete collection development policies from six academic institutions of varying size and emphasis are included. The documents range from six to twenty-six pages; one is a draft. Most of the policies state guidelines for selection and retention not only of monographs but also of specialized items, including serials, gifts, and nonbook materials. A policy statement for an undergraduate health sciences institution may provide a model for special college libraries.

Specialized collection policies make up the remainder of the volume. Those for individual academic departments for the most part define policies in terms of collection levels. A comprehensive policy for computer software will be a useful model for many libraries; however, inclusion of additional examples of such expanded policies for nonbook formats would have been helpful. Other policies include special collections, archives, and withdrawals. A sample acquisitions policy for a three-college consortium includes well-thought-out philosophical and policy statements.

The truly wide variety of examples included here will make the task of composing a collection development policy less overwhelming to the first timer. The specialized examples will be helpful to librarians rewriting or reviewing their policies, a task which should certainly be performed on an ongoing basis. And, while few academic librarians will argue with the necessity for such policy documents, many college administrators are reluctant to sanction such efforts because of time and personnel involved; this collection of policy statements provides ample evidence of the worth of such expenditures.

Unfortunately, like other volumes in

the series, this Clip Note is frustrating to the cataloger because of its lack of LCCN and CIP.—*Mary Margaret Benson, Linfield College, McMinnville, Oregon.*

One Hundred Years of Sci-Tech Libraries: A Brief History. Ed. by Ellis Mount. New York: Haworth Press, 1988. 193p. \$24.95 (ISBN 0-86656-745-3). LC 87-34567. Issued also as *Science & Technology Libraries*, v.8, no.1 (Fall 1987).

The volume is dedicated to the 100th anniversary of the founding of the School of Library Economy by Melvil Dewey. Half of it covers academic sci-tech libraries, public library departments devoted to science and technology, sci-tech libraries in the federal government, development of corporate sci-tech libraries, information retrieval, and history of education for sci-tech librarianship. The other half is a statistical survey of data from twenty-three academic scientific and engineering libraries in ARL, a survey of literature on CAD/CAM, new reference works in science and technology, and sci-tech in review, the last two being regular features of the journal.

The technique is somewhat similar to the *Library Trends* survey issues and the *LRTS* "Year's Work in . . ." coverages, except for the Emerson Hilker statistical article, new reference works, sci-tech in review, and the Everett H. Brenner piece.

Do not look for tributes to Charles Cotton Dana, who was instrumental in founding the Special Libraries Association, for citation to the Alma Clarvoe Mitchell account of SLA, or for a lot of attention paid to the tremendous effects in sci-tech libraries produced by Xerox, audio- and videotape/recorders, zebra stripes, laser disks, and OCLC. Also missing is coverage of the fantastic increases in the costs of serials, especially the sci-tech ones; electronic books and indexes; and the facsimile machine, all significant developments in not only sci-tech libraries but for all involved in information science.

Nor is there much here of interest on collections, organization, and automation, all matters of basic interest to LRTS readers. Karle J. Pearce mentions earlier collections briefly, and the John Crerar and Linda Hall libraries are given some attention by Pearce and Jean Z. Piety and Evelyn M. Ward. There is some coverage of the special collections of sci-tech materials created in academic, public, and government libraries. Automation, except for the Brenner article, is covered only briefly and in passing.

The best piece, in this reviewer's opinion, is the Brenner personal "testimony" and observations, but not for the technical information. It should be read by all those considering, or who are already involved in, information retrieval, whether in sci-tech libraries or others.—*Ambrose Easterly, Dowelltown, Tennessee.*

Meeting the Preservation Challenge.

Ed. by Jan Merrill-Oldham. Washington, D.C.: Association of Research Libraries, 1988. 70p. paper, \$28; \$14 to ARL member libraries (ISBN 0-918006-15-5). Papers presented Oct. 22, 1987, and originally published in *Preservation: A Research Library Priority for the 1990s: Minutes of the 111th Membership Meeting of the Association of Research Libraries.*

Statewide Disaster Preparedness and Recovery Program for Florida Libraries. By John N. DePew. Occasional Papers, no.185. Champaign, Ill.: University of Illinois Graduate School of Library and Information Science, 1989. 51p. paper, \$5 plus \$2 postage and handling (ISSN 0276-1769).

As libraries attempt to expand services while coping with ever-shrinking budgets, interlibrary cooperation becomes more and more vital. The preservation of library materials is one area in which the magnitude of the problem threatens to overwhelm individual libraries, and sharing resources may be the only solution. The following two

books describe cooperation in different areas of preservation and among different types of libraries.

Meeting the Preservation Challenge consists of papers presented at an Association of Research Libraries (ARL) membership meeting. Directors and preservation librarians from large research libraries, along with executives of funding agencies, discuss a broad range of preservation planning and program development issues.

David C. Weber, director of libraries at Stanford University, reviews the problem of disintegrating and unusable research materials and ARL's program to encourage local and cooperative preservation programs. The Librarian of Congress, James H. Billington, proposes that preserving our cultural past is necessary because it may provide guidance for future actions.

William J. Studer, director of libraries at Ohio State University, challenges directors to assume a leadership role in preservation by committing funds, hiring qualified preservation administrators, and inspiring their staffs. Practicing preservation librarians list the components of a preservation program, such as assessing collections, planning treatments, educating users, hiring staff, and housing and handling materials. Others address national and international cooperation, funding, and the responsibility of research libraries to assume leadership positions in preservation.

The primary audience for these papers is administrators of large research libraries, but the provocative and cogent argument for a preservation program applies to administrators of all libraries that are responsible for materials of lasting value.

Statewide Disaster Preparedness and Recovery Program for Florida Libraries is the report of a project whose goals were to alert academic and public librarians in Florida to the nature of fire- and water-related disasters, train them in disaster preparedness and recovery, and establish a statewide library disaster recovery network. These

goals were met by surveying the need and presenting workshops throughout the state.

The report includes a thorough description and analysis of the survey methodology. The questionnaire and cover letters are included in an appendix, and the answers are listed and discussed in the text. The mechanics of setting up the workshops are discussed and the contents of the workshops are outlined, but the actual techniques that were taught are not included.

The project was well planned and the report is well written. It will be a useful guide to library groups that are planning disaster recovery networks. It does not directly address recovery techniques or provide a blueprint for those who are writing local disaster plans. It may be interesting to people who want examples of library questionnaires, or who want to organize other kinds of library networks.

Both books include bibliographic references but no index. They are recommended to anyone interested in the topics covered.—*Martha Hanscom, University of Wyoming, Laramie.*

The British Library: A Guide to Its Structure, Publications, Collections and Services. By Alan Day. London: Library Association (dist. in U.S. by American Library Assn.), 1988. 190p. \$27 (ISBN 0-85365-628-2).

Day, head of the Department of Library and Information Studies at Manchester Polytechnic, sets himself the task of writing a "descriptive conspectus" of the publications, both those issued by the library itself and those published elsewhere, that describe the British Library's collections or services. To give a context to what would have otherwise been a bleak summary, he summarizes the history both of the library from its formation in 1973 to the present and of its predecessor collections and services, and describes the library's present activities and plans for the future.

The collections themselves are such a patchwork (the printed and manuscript collections at the British Museum in Bloomsbury; the Library Association library nearby on Ridgmount Street; the Newspaper Library at Colindale; the recorded sound collections in South Kensington; the Lending Division in Boston Spa, Yorkshire; and the Science Reference and Information Service at two locations in Holborn) and the services so wide-ranging (e.g., the Preservation Service, the Copyright Receipt Office, and the *British National Bibliography*) that outsiders may well wonder how it can all be governed. The library seems less an institution than a figment of administration. Presumably, the new building going up in St. Pancras will change that by bringing the scattered units under one roof, giving the library at last a home of its own.

Day describes this well enough, providing sections on humanities and social sciences, in which he describes the collections in central London; on bibliographic services, including *BNB* and *BLAISE*; on science, technology, and industry, including the Lending Division in Boston Spa and the science libraries in Holborn; on research and development; and on the library's future plans. In each section he summarizes in narrative form the publications that treat that portion of the library, sometimes going so far as to give the dimensions of pamphlets or the kind of paper on which they are printed. All this is workmanlike, but no student will want to read any section straight through, let alone the entire work. Day has written a reference book in monograph's clothing, which, in the tradition of such works, few will look into until forced by need to do so.

The book comes alive at last in the chapter called "Most Urgent Need," which chronicles the efforts of the library directors to find a location for their new building. This story reveals much about Britain itself—the intimate ties between national institutions and the government, opposition from the

council of the Borough of Camden, articles in *TLS* protesting the abandonment of the round Reading Room at the British Museum. Day here shows a flair for humor that had hitherto been hidden: he calls a pamphlet issued by the library to justify expansion of the Bloomsbury site a "non-starter in the Westminster Public Relations and Environmental Stakes," and comments that an architect's article on the St. Pancras building "expand[s] rather than diminish[es] the mystery of the architect's craft."

Day's book certainly opens the way to further exploration of the British Library, and it may seem graceless to criticize a book for not doing something its author did not set out to do. Nevertheless, one wishes for a full version, with all its politics, of the battle to build the new library; for some hint of what an incomparable place for study the library and its predecessors have been; for an indication of the stupefying richness of the collections; and for an account of what it is like to study there. The subject is heavy with possibilities, and Day's book, however worthy, engenders regret that he did not write one of those other books instead.—*Robert Balay*, *Choice*, *Middletown, Connecticut*.

Qualitative Collection Analysis: The Conspectus Methodology. By Deborah Jakubs. SPEC Kit #151. Washington, D.C.: Association of Research Libraries, Office of Management Services, 1989. 119p. paper, \$20 plus \$5 postage and handling, U.S. (ISSN 0160-3582).

This volume addresses the assessment of collections through the use of the RLG (Research Libraries Group) conspectus methodology and suggests practical uses for the information thus obtained. It follows the usual format for SPEC kits and includes a flyer, the 1988 North American Collections Inventory Project (NCIP) Questionnaire, and selections from documents sent in response to it. The documents illustrate assessment activities under way in a dozen university libraries, a library ref-

erence agency, and a regional project.

The materials are divided into four sections. The first covers planning documents. These rightly stress the importance of setting a firm timetable for the completion of assessments and establishing the project as a priority within the institution as a whole. The second part discusses the actual methods used to rate the relative strength of collections. While no new methods are proposed, the selected documents give a good overview of the usual ones and some insights into the problems of implementing them.

The third grouping of materials shows how the assessment data can be put to use. The sample documents chiefly cover writing a collection development policy statement (three examples) and establishing priorities for preservation by subject area (two examples). Some other local possibilities are suggested as well, such as using the completed conspectus materials in training new bibliographers and as components in the evaluation of graduate programs. More coverage of the less obvious uses of assessment data would have been helpful.

The final section consists of sample reports. These provide several different models for those compiling similar documents. The report on the implementation of the conspectus for psychology in the University of California system is of particular value for the light it sheds on the problems of coordinating assessment and collecting activities between a number of campuses.

The major limitations of this book are those inherent in its form. It is somewhat disjointed and internal library documents often make for dry reading. Some of the pages, particularly those with tables, are reproduced poorly. Still, it is a useful volume and should provide much practical help to anyone involved in collection assessment.—*Fred W. Jenkins*, *University of Dayton, Ohio*.

An Introduction to AACR2: A Programmed Guide to the Second Edition of the Anglo-American Cata-

loguing Rules, 1988 Revision. 3d ed. London: Clive Bingley (dist. in U.S. by American Library Assn.), 1989. 153p. £11.50; \$21 U.S. (ISBN 0-85157-457-2).

As *AACR* develops over time and appears in new editions or revisions, it becomes necessary for this well-established programmed text to match the changes. The first edition provided an introduction to *AACR1* and was reviewed by Michael Gorman (who subsequently became editor of *AACR2* and the 1988 revision) in *Library Association Record* (75:16 (January 1973)). The second edition (Hunter 2) addressed itself to *AACR2*, with Antony Groghan's review appearing in *Library Association Record* (81:345 (July 1979)).

There have been some internal changes in the programmed textbook through its own editions, apart from the obvious code differences it reflects. The scrambled first edition was unpagged, but the two most recent versions have remedied this defect. However, the first edition included a helpful feature, that of indicating at each answer frame the relevant question frame, e.g., Frame 123 (100). This device has been omitted from the second and third editions. Its presence could save a reader some time, although the organization of frames in these later editions is more user friendly than in the pioneer edition.

The text is structured in eight phases: description, choice of access points, choice of access points-added entries, headings, uniform titles, references, analysis, and worked examples. This last phase provides reproductions or transcripts of source areas for items drawn from a range of media—a map, a sound disk, a computer program (replacing a book-bag item in Hunter 2), a serial, and two printed monographs (more information is supplied about one of these than in Hunter 2).

Each phase of the program is organized into frames. The first edition carried 234 frames, the second 216, and the new edition 218. Just over half of the 218 frames are "information"-

type frames, the balance consisting of response frames. Information frames pose open and occasionally multiple-choice questions. Specific reference to rules and other parts of *AACR2* is made in most information and response frames.

The purpose of the text is to teach fundamental principles of the standard, and it must be used in conjunction with a copy of the code. A person already familiar with *AACR2* through experience or having worked through Hunter 2 might usefully study *A Brief Guide to AACR2, 1988 Revision, and Implications for Automated Systems*, by Jean Weihs and Lynne Howarth (Ottawa: Canadian Library Association, 1988), rather than study Hunter 3. The latter does not concentrate on the 1988 Revision as such but incorporates changes while addressing the code as a whole. Code changes include modifications in rule numbering and wording, reorganization of music uniform title rules, and revision of rules for computer files. Programmed text changes include corrections of errors and of insufficient spacings that occurred in Hunter 2. Hunter 3 should encourage and assist students of information and library science, instructors, and beginning catalogers to gain ground and appreciation of the entire *AACR2* in its new manifestation. There may well be a need for more advanced and specialized programmed textbooks focusing on detailed study of the new code, building on the foundations laid by Hunter and equally formulated on sound behavioral and learning theory findings.—*Alan R. Thomas, Department of Information and Technology, Ealing College of Higher Education, London.*

Intelligent Interfaces and Retrieval Methods for Subject Searching in Bibliographic Retrieval Systems.

By Charles R. Hildreth. Advances in Library Information Technology, no.2. Washington, D.C.: Cataloging Distribution Service, Library of Congress, 1989. 120p. paper, \$20 (ISBN 0-8444-0626-0). LC 88-39045.

This small but very significant book presents the practical results of research and experiments carried out over the last decade, initially to improve "subject access and subject searching in today's large online bibliographic retrieval systems." As the process of gearing up for this beginning got under way, it was soon found that more was needed, especially "beyond an investigation of online retrieval system front ends," (a term not yet defined and adapted). Terminology had to be defined, realities faced. Problems abounded. Past research and practices were studied. The reader is advised to read the first five pages very carefully because understanding the various realities described in the introductory material requires considerable attention. Readers who are not familiar with online public access may wish to sample the nearest system available.

Pertinent examples taken from practice in various libraries are used. Merely getting at the desired knowledge can be a challenge. The example used for Kierkegaard deals with a complex name where there are several pseudonyms, plus alternative spellings (see page 14). However, the goal of the online public access catalog in this second generation has been to add on to and go beyond Cutter's classic basics by which a user may find desired items.

The section on problems and shortcomings of today's OPACs covers five major problems "experienced by users of the second generation online catalogs in 1988." Briefly, they may be summarized as:

- too many failed searches
- frustration for the user in the process
- unfamiliarity with subject indexing policy
- misunderstanding of current search and retrieval methods
- incomplete retrieval of what is in the database

One may comment at this point that users of the card catalog have the same problems in many cases.

This monograph presents some diffi-

culties in pinpointing its sources. A large proportion of references do not cite specific pages but provide the total paging of a paper, chapter, or monograph. The reader who has kept up with the literature will not be happy about having to read or reread the original chapter or review article in order to find the actual context for specific statements given in the text. No doubt when Ranganathan promulgated his Fourth Law of Library Science ("Save the time of the reader"), this type of situation is what he had in mind. References in some cases refer to previous citations (e.g., Markey, Karen, *op. cit.*) but fail to note that the author may be cited for more than one work, thus requiring the reader to read all citations to find the correct one.

In addition, from the historical point of view the practice of using total paging makes it necessary to consider what meaning was attached to the term(s) at the time of publication and whether that meaning has changed. Where whole chapters are cited instead of pertinent parts, much of the material that has to be read is not necessarily applicable to the point for which it is cited.

This book is recommended to all professionals who are interested in keeping up with information retrieval in the changing online public access systems now available. Input has not been limited to North American sources; the text includes interesting data from England, Scotland, France, Switzerland, and Australia. The book should prove very helpful for all professionals developing systems for productive subject searching in bibliographic information systems.

The results described in this work are at once encouraging and discouraging—encouraging because of the quality of continuing productive research on interfaces and retrieval methods. They are discouraging because this research has not yet created a recognizable breakthrough. What one can safely define as factors of indeterminacy, uncertainty, and variability all have been constants. Surely some of

the present research will soon point to what will eventually be recognized as the solution, or more likely, a set of solutions. It looks as if the next decade will be as lively and productive as the 1980s have been.—*Phyllis A. Richmond, Cleveland, Ohio.*

The ACLS Survey of Scholars: Final Report of Views on Publications, Computers, and Libraries. By Herbert C. Morton and Anne J. Price, with the collaboration of Robert Cameron Mitchell. Washington, D.C.: Office of Scholarly Communication and Technology, American Council of Learned Societies, 1989. 137p. \$27.50 (ISBN 0-8191-7260-X); paper, \$14.75 (ISBN 0-8191-7261-8). LC 88-39482. (Available from University Press of America, 4720 Boston Way, Lanham, MD 20706.)

There is little disagreement within our profession that the single most important consideration in managing an academic library is also the least understood: the perspective of the faculty, our chief clientele. The ACLS survey is a snapshot of scholars in the humanities and social sciences, nationwide, taken during a crucial time of transition for libraries in the system of scholarly communication. While it solicits views on fairly specific matters, it also stimulates and serves as a vehicle for the expression of broader concerns about the academic environment. Conducted during 1985, the survey is based on a stratified random sampling of 5,385 scholars both within and outside the academic community, resulting in a usable return rate of 71 percent. The present volume constitutes the definitive report, superseding earlier releases of the findings by the incorporation of thirty new tables, a special section on the views of retirees, a technical appendix on the survey procedure, a copy of the survey questionnaire, and a most helpful analysis of the data pertinent to libraries prepared by Paul Kantor.

As the title of this handy volume makes clear, the survey attempted to

ascertain the collective academic perspective on publishing and publications, on the role of computing, and on the role of the library. The survey also does well in recording many of the habits of scholars as they go about their work. Specific findings are far too numerous and varied to be cited here, for the survey provides insight of varying levels of value into a great many areas of concern to academic librarians, well beyond those that are presented just in the library section. Implicit in the reported findings is considerable potential for the development of hypotheses to guide further research in a variety of areas. For example, literary scholars are found to be less favorable about the library than are other scholars (p.112). A recurring inference from the data points to the need to market library and information services more seriously than our profession has done thus far. This is not a new idea, of course, yet it is noteworthy that it emerges from this particular survey.

The present reviewer (who occasionally wears rose-colored glasses) finds that the survey reflects a healthier, less chaotic scholarly environment than other diagnoses have suggested. As a group nationwide, faculty do not seem to hold unreasonable expectations for either the library or computing; in fact, they are more patient and accepting about libraries than are most librarians. Nor are scholars either unduly skeptical or unreasonably enthusiastic about the potential of the computer in their disciplines. If there is cause for disappointment in this insightful, yet reassuring assessment, it is that the scholarly community does not have higher expectations for the library; for example, for more professional assistance and more communication about services and resources on the local campus.

One can quibble about the frequent typographical errors that mar the text, about methodology, about the scope of the survey, about the percentage of active scholars surveyed, or about various interpretations of data. But the fact

remains that the ACLS survey is a carefully executed examination that now constitutes a very important document in the historiography of American scholarship, as well as a benchmark for comparative study in the future.—*Charles B. Osburn, University of Alabama, Tuscaloosa.*

Buying Books: A How-To-Do-It Manual for Librarians. By Audrey Eaglen. How-To-Do-It Manuals for Libraries, No. 4. New York: Neal-Schuman, 1989. 166p. paper, \$35 (ISBN 1-55570-013-6). LC 88-3368.

The author's self-proclaimed focus is to educate professional librarians as to "how to buy books good," and step by minute step she explains how to achieve this goal. Unfortunately, the author proceeds from the premise that acquisitions librarians know little or nothing about the publishing industry or about how to purchase books efficiently and effectively. Therefore, to those of us (I would guess the majority of conscientious acquisitions librarians) who do keep abreast of trends in publishing and continuously endeavor to seek better the less-costly ways of acquiring library resources, the tone of the book is condescending. Moreover, the author confines examples of library purchasing procedures to a large public library with several branches, thus limiting the applicability to academic and other library situations. The book affords little new or particularly helpful information to its designated audience of professional librarians.

However, the book does provide an excellent overview of the publishing industry and library purchasing procedures for library science students or others outside the profession. In Part I the author covers the book publishing industry, from the first book inscribed on stone to the state-of-the-art technology of the 1980s. Part II describes the various types of vendors, the advantages and disadvantages of each, and factors to consider in choosing a vendor. The obligations of both vendor and

library to achieve a mutually productive relationship are delineated. The author concludes with chapters on the ordering process and on her personal experiences in automating acquisitions.

Occasionally the author makes generalizations that seem questionable, such as "librarians seem loath to discuss the companies that provide them with books" (p.94). And there are some inaccurate statements, such as "Acid-free paper . . . is also relatively expensive" (p.61-62). Recent articles in *Publishers Weekly* indicate that "acid-free paper is comparably priced to acidic paper in quality weights and grades" (March 31, 1989, p.12), and that once mills are converted, acid-free paper can actually be less costly than acidic paper. Despite these detractions, the book provides a good general introduction to the subject. Some helpful back-of-the-book pluses include a list of selected U.S. wholesalers, a glossary, a selected annotated bibliography, and an index.—*Nancy Myers, University of South Dakota, Vermillion.*

The Serials Information Chain: Discussion, Debate and Dialog. Proceedings of the North American Serials Interest Group (NASIG), 2d Annual Conference, June 14-17, 1987, Denison University, Granville, Ohio. Ed. by Leigh Chatterton and Mary Elizabeth Clack. New York: Haworth Press, 1988. 174p. \$29.95 (ISBN 0-86656-744-5). LC 87-31063. Also published as *The Serials Librarian*, v.13, no.2/3, Oct./Nov. 1987. (New address for publisher: 10 Alice St., Binghamton, NY 13904).

The serials information chain of the title refers to serials publishers, subscription agents, and serial librarians, all of whom are well represented among the authors of papers given at the second annual NASIG conference. Since the goal of NASIG is to promote learning and understanding within this information chain, most of the proceedings consist of publishers, ven-



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dors, and librarians explaining their activities to one other. As at the first NASIG conference, the discussion, debate, and dialogue are fostered by a program covering some of the hottest topics in serials.

Of these topics, serials pricing, not surprisingly, receives the most attention. In a very candid discussion two librarians go head-to-head with a publisher over steadily increasing journal prices. The effect of the current business climate on the ethics and pricing practices of both publishers and vendors is eloquently covered by a vendor, with a critical response by a librarian. In another dialogue the relationship between primary publishers and secondary publishers (indexing and abstracting services) is explored by representatives of each. Other articles are primarily informational, such as an editor describing his experiences with a new magazine. Following the twelve papers in the proceedings, brief reports are given on six workshop sessions, which offer practical advice or give accounts of firsthand experiences.

The papers in this volume reveal the diverse styles of the authors but are generally well written, and the whole is edited to reflect the structure of the conference. Since the second NASIG conference emphasized concerns in serials acquisitions, topics such as serials cataloging, binding, preservation, and automation are ignored or given less coverage than at the first conference. This narrows the audience for this volume to readers directly involved in serials acquisitions or to those who wish to educate themselves about the materials that are assuming ever larger portions of library budgets. Perhaps trying to follow some of its own advice, this volume costs \$5 less than the previous NASIG proceedings. It contains enlightening information for libraries or businesses in which serials are a major concern.—*Lori Osmus, Iowa State University, Ames.*

Indexing: The State of Our Knowledge and the State of Our Igno-

rance. Proceedings of the 20th Annual Meeting of the American Society of Indexers, New York City, May 13, 1988. Ed. by Bella Hass Weinberg. Medford, N.J.: Learned Information, 1989. 134p. paper, \$30 (ISBN 0-938734-32-6). LC 89-2452.

In 1978 the second edition of *Anglo-American Cataloguing Rules* brought belated recognition of the value of indexes by authorizing the inclusion of the note "Includes index" in bibliographic records. Even though the Library of Congress has subsequently decreed in its *Cataloging Service Bulletin*, No. 44 (Spring 1989), "Do not make a note for the presence of an index," it is heartening to see that in more enlightened circles the index is still highly regarded. This volume presents further evidence of the current usefulness and importance of the index in its traditional and new formats.

As indicated in the subtitle, this volume brings us up to date on the state of the art of indexing, and it also presents a short history of the American Society of Indexers. The topics covered are: the literature of indexing, book indexing principles and standards; indexing software; database design; indexing applications; indexing for print, online, and CD-ROM; vocabulary control; indexing and classification: file organization and display for information retrieval; automatic indexing; indexing, searching, and relevance; and the usefulness of indexes. All but one of the above includes bibliographical references.

The editor's agreeable writing style is readily apparent in the preliminary matter, and her excellent introduction to each paper relates it as part of a coherent whole, leading the reader enthusiastically on to the paper itself. Although style varies by contributor, each paper is well written, interesting, and informative. Perhaps due to excellent editorial work, one has the decided impression that there was but one author. The physical layout of this volume is pleasing, and only eight minor typo-

graphical errors were noted.

The index is serviceable, although not as complete as it might be. Some adjectival entries scattered throughout the index might usefully have also been grouped under the already established noun entry, and two sets of reverse entries appear to be incomplete, e.g., "Controlled vocabularies, versus free text retrieval, 97-99" and "Free text information retrieval, versus controlled vocabulary, 62-66." And it is most surprising to find "Standards of indexing. See Indexing standards; Principles of indexing" in the same index with "Principles of indexing. See Indexing principles"!

Overall, however, this is an excellent, pleasant-to-read little volume that merits a place in any library because of its survey of the current state of the indexing art and its relationship to information science and research in artificial intelligence.—Eldon W. Tamblyn, *Portland State University, Oregon.*

The USMARC Format for Holdings and Locations: Development, Implementation, and Use. Ed. by Barry B. Baker. Monographic Supplement #2 to *Technical Services Quarterly*. New York: Haworth, 1988. 231p. \$32.95 (ISBN 0-86656-695-3). LC 88-16383.

The strong point of this book is that it provides the reader with a diverse array of experiences with implementing the USMARC Format for Holdings and Locations. The institutions represented are a network, a subscription agent, two library system vendors, and four universities. Also included are three very helpful essays: one that recounts the history and explains the fields of the format; one that addresses the elements of the ANSI standard for serial holdings statements; and one that reports on SISAC's (Serials Industry Systems Advisory Committee) work on standards that will facilitate the handling of serials in automated environments.

The majority of the papers provide precise details of the implementation process and include summaries that

outline problems, successes, and suggestions. There are accounts of extensive revision of the format for local use as well as descriptions of strict adherence to the format's guidelines. It was encouraging to read that the format is being accommodated by locally developed systems as well as by commercially produced systems and that cooperation among institutions is occurring. A small number of the papers provide the reader with only plans or accounts of half-done installations.

Anyone planning to implement the format would benefit from reading all the papers in this compilation. Selective reading of the papers that fit an institution's environment is not enough to provide an understanding of the effort involved. Reading all of the papers gave me an overview of the format's limitations and assets. The majority of the papers expressed the hope that the format would take users' experiences into consideration and revise and enhance the format with better explanations and examples. There was a consensus that the format should provide guidelines that would serve as an authoritative set of rules for implementing the format, much as AACR2 serves as the authority for cataloging.

I was favorably impressed by this practical group of papers. I believe that it is a good source of information and guidance for any institution planning to implement the format.—Beverley Geer-Butler, *Maryland Newspaper Project, College Park.*

Library Management and Technical Services: The Changing Role of Technical Services in Library Organizations. Ed. by Jennifer Cargill. New York: Haworth, 1988. 154p. \$32.95 (ISBN 0-86656-779-8). LC 88-6824. Also published as *The Journal of Library Administration*, v.9, no.1.

In this volume Jennifer Cargill has collected articles from fifteen librarians who are primarily academics, ranging from heads of acquisitions to administrators. Each was asked to

contribute his or her viewpoint on "The Changing Role of Technical Services." The result is eleven well-written articles that cover a broad range of topics. The text is well edited, and the overall quality is good.

Reading this volume vaguely brings to mind *Library Technical Services: Operations and Management*, edited by Irene P. Godden (1984). The difference lies in that the Godden title gives an overview of current operating procedures, while the Cargill book concentrates on the changes occurring in technical services.

In the first article Diane J. Cimbala examines the mission of technical services in the library, James R. Dwyer discusses the evolutionary role of technical services, Donald C. Riggs clearly outlines the difference between a leader and a manager, and Karin E. Ford suggests collection development can be a common ground for the meeting of public and technical services. Virginia Lee Andrews and Carol Marie Kelley describe the changing staffing patterns that occurred at Texas Tech since the 1970s. Constance L. Foster encourages those suffering from "technostress" to be flexible, sensitive, and adaptable. In "Staffing Technical Services in 1995," Janet Swan Hill concludes: "... no single prediction about technical services staffing would serve all libraries."

Brian Alley urges libraries to look at their technical services staff and organize them so they can be more cost-effective. Gisela M. Webb recommends educating technical services staff for the future by instilling new visions and values, setting a good example, and encouraging all staff to become the best they can be.

Dana C. Rooks and Linda L. Thompson recognize the need for library managers to "fully analyze and evaluate the impact of automation on technical services." The final piece, appropriately enough, is a selected list of "Notable Literature of 1980s for Technical Services," by Gloriana St. Clair, Jane Treadwell, and Vicki Baker.

There are many thought-provoking ideas presented in this volume, but there is nothing that has not been addressed before. Attention to preservation and conservation, the proliferation of nonprint materials, and electronic document delivery are lacking, and an index would have been a useful addition. Students will find this title to be most useful, because it provides historical, technical, and management background for technical services. It also gives a feel for the nature of technical services and presents a positive image of technical services librarians as "planners, thinkers, and doers."—*Elaine K. Rast, Northern Illinois University, DeKalb.*

A Bibliographical Companion. By Roy Stokes. Metuchen, N.J.: Scarecrow, 1989. 297p. \$27.50 (ISBN 0-8108-2175-3). LC 88-34831.

This dictionary of terms is intended for the beginning student of bibliography. It includes over 500 terms covering bibliography, bookbinding, printing, papermaking, bookselling, and publishing. Its stated purpose is to complement John Carter's *ABC for Book Collectors* and Geoffrey Glaister's *Glossary of the Book*. The book contains an introduction, a list of frequently cited references and abbreviations for them, and an alphabetic list of terms. Discussions of the origin, development, and use (or misuse) of a term are often included. Many terms occur in Carter or Glaister, but Stokes also includes terms found in neither. In the introduction, Stokes says he wishes the student to understand the "general idea" for each entry, and then "to set them on their way." For many terms, the idea is not clear, and good directions are not provided.

Any study of bibliography is made difficult by the lack of standardization in the use of terminology and by the fact that many terms have multiple meanings or are used imprecisely. Stokes does not consistently address these points. Many definitions are clearly expressed (see the entries for "dust

jacket" and "limited edition"). Stokes provides good notes and references to many of the terms defined, but some need references where there are none (for example, the parts of a press, "tympan" and "frisket," or the typographic term "body"). Some entries do not agree with accepted usage or spelling of terms, and the notes and examples included may not support the author's definition (see the use of "wheel" and "roll" in the entries for "fillet" and "roll border"; and "book binder" should be bookbinder). Some terms are unusual and their origins are not explained (see "membrane books"). In some cases Stokes' definitions are incomplete (see "coucher," where its use in papermaking is not mentioned), difficult to understand (see "pallet"), inaccurate (see "diced calf"), or misleading (see "cumdach," where a reader might assume the listed books are also missing). Two terms, "golden letter" and "lino cuts," have no definitions. The book contains some incorrect definitions that tend to encourage the misuse of terminology that others strive to correct (see "paste downs," where what Stokes describes should be called spine linings and fill). Some definitions include terms which themselves need an explanation (for example "printing" and "perfecting" under "half-sheet imposition").

Stokes states that the reader should look up terms in Carter and Glaister, in order to provide the broadest perspective possible. This is sound advice, particularly for the technical processes of book production. For bookbinding terms, the reader should also consult *Bookbinding and the Conservation of Books*, by Matt Roberts and Don Etherington. The *Oxford English Dictionary* would be useful for other terms, as would the index in McKerrow and Gaskell.

This book could be improved by clarifying some entries and deleting terms that are explained well in Carter or Glaister. It would also benefit from the use of typesetting. In the introduction,

Stokes refers to references and suggested readings for his entries; note that these are called, respectively, "notes" and "references." This book does provide some useful information for the student, if used as Stokes directs in his introduction. It is not recommended as a substitute for Carter or Glaister.—*Karl Longstreth, University of Michigan, Ann Arbor.*

Statistics for Library Decision Making: A Handbook. By Peter Hernon and others. Norwood, N.J.: Ablex, 1989. 200p. \$35 (ISBN 0-89391-586-6); paper, \$19.95 (ISBN 0-89391-605-6). LC 89-6744.

Statistics is a particularly powerful research tool that librarians are slowly beginning to recognize and appreciate as an equally powerful management tool. The problem is that many librarians are not prepared to work with either quantified data or statistical operations and tests. As one of those who would often prefer to read the prose introductions and conclusions of statistical reports, this reviewer knows the frustration of viewing a page of mathematical statements and feeling inadequate to comprehend it easily. Out of this has come an appreciation of statistical concepts and findings that are expressed in simple, clear prose. Perhaps the best example is the chapter on "Retrieval Systems Evaluation," by Charles H. Davis and James E. Rush in their *Guide to Information Science*. Without talking down to the reader, they present basic statistics in easy-to-read and comprehensible English, providing the reader with a useful complement to textbooks on statistics.

Is another book on statistics for librarians needed? Yes! Does this book meet that need? Only to a limited extent. Hernon, the primary author and seeming editor, states in his preface that "This handbook . . . was intended to assist students [in the Simmons College Doctor of Arts program] . . . in better understanding statistics and the types of decision that the selection of a test entails." He then identifies nine

additional objectives which include a review of the research process, a presentation of fundamental statistical concepts and methods, and the need to familiarize library managers with statistical analysis graphics and microcomputer software. Thus the authors set themselves an ambitious task, too ambitious, perhaps, for in trying to do so many things, they did not fully accomplish most of their objectives.

Statistical concepts are discussed in six of the eleven chapters, while the other five deal with research methods in general and their administrative value, microcomputer software, three examples of statistical applications, and some publication advice. The seven-page bibliography contains a mixture of textbooks and examples of the use of statistics from the professional literature. There are author and subject indexes.

As a general rule, this handbook will not stand alone, nor was it intended to. Its principal value will be to students and librarians who are wanting additional explanations of particular statistical procedures, tests, and the surrounding concepts. In such situations individual tastes and needs determine which of many supplementary statements will provide that point of sudden comprehension. When *Statistics for Library Decision Making* provides that breakthrough, it will be a valuable resource. Otherwise, it will simply be another book on the shelf.—Lawrence W. S. Auld, East Carolina University, Greenville, North Carolina.

A Guide to Book Publishing. Rev. ed. By Datus C. Smith, Jr. Seattle: Univ. of Washington Pr., 1989. 268p. \$25 (ISBN 0-295-96651-3); paper, \$12.50 (ISBN 0-295-96652-1). LC 88-5754.

Aimed at people beginning careers in book publishing in developing countries, this volume presents a clearly written survey of the whole publishing process. Consequently, it offers valuable information to librarians, educators, scholars, and anyone interested in

publishing. Smith is well qualified as an author on this topic, having served as director of the Princeton University Press, president of the Association of American University Presses, and president of Franklin Book Programs.

This new publication is a complete revision of the 1966 edition of *A Guide to Book Publishing*. The section on printing, for example, includes desktop publishing and other forms of current technology. Smith has also added a special appendix by Paul Gleason entitled "Copyright, Licensing, and Piracy."

Retaining his original outline, Smith begins his guide with a philosophical and practical statement of the value of publishing to the culture of a developing country. He moves on to describe the partnership of author, printer, bookseller, and publisher. More than one-third of the book describes the book publishing process: the economics of book publishing, editorial development, editing, designing, printing and binding, selling, and promoting. He also deals with the special problems of textbooks, children's books, and translations. Separate chapters discuss book clubs and mass marketing, retail bookselling and publisher's accountancy, and the issues of rights and contracts. To his credit, Smith focuses on generic functions that a new publisher must consider regardless of location. This aspect gives the book a sense of universality.

With both of his editions Smith addresses a special need not met by other authors. For example, the papers in Elizabeth Geiser's *The Business of Book Publishing* (Westview, 1985) cover the same topics but focus only on American publishing. Numerous guides currently on the market offer advice for the new author. *Publishing in the Third World: Knowledge and Development*, edited by Altbach, Arboleda, and Gopinathan (Heinemann, 1985), reviews the publishing situation in a number of developing countries. While citing Smith several times, the authors analyze the issues rather than explain how publishing works. Smith's

target audience is the beginning publisher in the developing countries of Asia, Africa, and Latin America. Since his first edition was translated into Arabic, Persian, Indonesian, and Spanish, we might anticipate future translations of this revision.

Smith's comprehensive checklist for a beginning publisher could benefit American and British novices as well as his foreign audience. Anyone wanting to publish or start an independent press could profit from this book. Smith's style is clear and straightforward, making him readable by secondary students on up. This volume could also be used as a supplementary text for a collection development course or as a reference source for training library staff. *A Guide to Book Publishing* is recommended for public, academic, and library school libraries.—*Laverna M. Saunders, University of Nevada, Las Vegas.*

Developing and Maintaining Video Collections in Libraries. By James C. Scholtz. Santa Barbara, Calif.: ABC-CLIO, 1989. 196p. \$35 (ISBN 0-87436-497-3). LC 99-16871.

This is a practical, well-illustrated manual for both professional librarians and nonprofessional staff who are involved in the policy and planning for, or the physical handling of, videorecording collections. It deals with half-inch videocassettes and their necessary equipment; however, many of the principles, policies, and procedures discussed can be applied to other video formats and in other types of libraries.

The major focus of the book is concerned with collection building, circulation, and associated problems—starting, developing, and evaluating a collection; various degrees of open and closed storage; copyright; fee-based loans; etc. The clearly written text is accompanied by charts, diagrams, tables, and photographs. Sources of supplies and current prices are listed. Bibliographical references are found at the end of each chapter. A detailed table of contents and a seven-page index facili-

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tate the reader's quick access to a particular point of interest.

Cataloging is the one topic for which Scholtz has provided poor guidance. Only three and one-half pages are devoted to cataloging, and this fact may reflect the author's lack of interest in, or knowledge of, this aspect of video-cassette collections. He recommends that the rules in *AACR2* be used, but the single example he provides (figure 2.7) does not follow these rules.

This book should be acquired by all libraries with a large or small collection of video recordings. Library patrons may also find information of interest in its discussions about the video industry; the selection, maintenance, and repair of video equipment; Beta versus VHS formats; videotape maintenance and repair; and predictions for the future of video technology, both software and hardware. It may also serve as an easy-to-understand beginner's text for students in library science or audiovisual techniques courses.—*Jean Weihs, Technical Services Group, Toronto, Ontario.*

Telecommunications for Information Specialists. By Larry L. Learn. OCLC Library, Information and Computer Sciences Series, no.11. Dublin, Ohio: OCLC, 1989. 165p. paper, \$15 (ISBN 1-55653-075-7). LC 89-8601.

Local Area Networks in Information Management. By Harry M. Kibirige. *New Directions in Information Management*, no.18. Westport, Conn.: Greenwood, 1989. 177p. \$39.95 (ISBN 0-313-26191-1). LC 88-7689.

Books such as the two under review here can vary widely both in terms of coverage and intended audience. Telecommunications, of course, is a very large and ever expanding, yet poorly defined, field; historically, it dealt largely with the technology of telephony and of moving information across transmission media such as wire, cable, and radio channels. Over the past decade or two, this field, particularly as

it is relevant to information scientists and library automation planners, has also grown to include the regulatory environment surrounding telecommunications, the very complex national and international standards process, some understanding of consumer electronics and broadcast technologies, and, perhaps most importantly, computer networking. Computer networking has developed a flavor quite distinct from traditional telecommunications and includes protocol architectures, software, distributed systems, routing, and similar topics; networking has become an extraordinarily complex and dynamic field in its own right.

Intended audience and approach in books covering these areas vary widely, from primarily descriptive works, through works aimed at technicians (on how to build things), to those aimed at researchers and engineers (on analytical approaches, requiring rather extensive prerequisites in areas such as mathematics). Some books emphasize general principles; others focus specifically on actual products and systems available in the marketplace at a given time. For any target audience, it is probably now impossible to prepare a comprehensive single-volume work.

Larry Learn, who has been involved with telecommunications and networks at OCLC for over a decade, has written a very fine monograph that would make excellent reading for anyone desiring an overview of today's telecommunications world. It is primarily descriptive, and should be accessible to readers with very modest backgrounds in telecommunications and engineering. While not encyclopedic, the coverage of the book is remarkably extensive, given its length, and the book at least touches on most of the important topics of today and tomorrow. (In fact, even the expert will find unfamiliar and interesting material in the book.) A unique feature is the focus throughout the book on the interplay between telecommunications, library automation, and information services. Coverage of regulatory issues is particularly strong.

To a great extent, the book deals with telecommunications from a traditional perspective, and includes a good deal of material about voice as well as data. I found only two flaws with the book, both of which I hope a second edition might correct. While Learn does survey a number of the basic issues in computer networking, I feel that the coverage of this area is far too brief, and that some additional discussion of protocols and distributed computing topics would have been valuable. Finally, the book does not really provide direct pointers to the more technical literature by topic, although it does include a lengthy bibliography. It is not very clear about where to go for more information on a specific topic.

I highly recommend Learn's book, particularly as an introductory survey of telecommunications for students and practitioners, although I would suggest supplementing it with some additional reading specifically on computer networking. Learn has done an outstanding job of pulling together and synthesizing a great deal of material from very diverse sources and presenting it in a concise, easy-to-read manner.

Kibirige's book is much more difficult to evaluate. Neither the intended audience nor the author's purpose seems clear. While also descriptive rather than technical, the coverage is very uneven, with some sections suddenly plunging into rather detailed technical discussions that seem out of place. The chapter topics seem disjointed; the book concludes with the results of a study from the City University of New York that seems irrelevant to most of the book.

There are a number of errors or startling omissions for a book on LANs and information management. For example, there seems to be no discussion of FDDI (fiber-distributed data interface), a key LAN technology for the 1990s. There is no coverage of wireless LANs. There is little coverage of network software, and TCP/IP—probably today's most important LAN protocol—is not mentioned. There is little

consideration of internetworks and the relationship between LANs and wide area networks, except for some erroneous material about national networks on pages 91–92. The ISO OSI model is discussed (again, with some errors in the layer definitions), but then dropped without relating it to actual applications. The author's definition of gateways and bridges on page 49 is at variance with normal industry usage and is not related to protocol architectures. The discussion of LAN security fails to mention that most LANs are broadcast (i.e., all stations on the LAN can "see" all data passing over the LAN), which seems to be a most basic security issue; nor does it discuss appropriate cryptographic technology for addressing this problem. The references are far from comprehensive, and are heavily weighted toward rather ephemeral articles from popular and trade magazines rather than more authoritative sources.

Kibirige does discuss, although rather superficially, a few topics of particular interest to library planners and information scientists, such as CD-ROMs on LANs. While I was glad to see this important topic raised, Kibirige's treatment of it seems confused (it deals largely with WORM, rather than CD-ROM) and misses many important developments.

I cannot recommend Kibirige's book. The reader already familiar with LAN technologies and applications will find little new here. Those seeking a basic understanding of LANs and their role in information management are likely to come away confused, unaware of essential topics, and occasionally actually misled; such readers would be much better served by other books. One good reference is *Linked Local Area Networks*, second edition, by Alan Mayne (Wiley, 1986).—*Clifford A. Lynch, University of California Systemwide Administration, Oakland.*

Management Issues in the Networking Environment. Ed. by Edward R.

Johnson. New York: Haworth Press. 1988. 141p. \$24.95 (ISBN 0-86656-692-9). LC 87-32940. Also issued as *Journal of Library Administration*, v.8, nos. 3/4 (Fall/Winter 1987).

Networking can mean many things to many people. In the introduction to this monographic reprint of an issue of the *Journal of Library Administration*, Edward R. Johnson gives his definition of that term as encompassing "the many activities that libraries are engaged in for interlibrary cooperation." In actual fact the primary focus of most of the articles is on networking as the interaction between organizations whose main function is to provide electronic bibliographic information to libraries, whether this be on a local, regional, or national level. The volume is divided into two sections—current networking problems and the future of networking.

Because of the time lapse between issue as a serial (April 1988) and publication as a monograph, many of the articles seem historical in their perspective rather than timely. This is compounded by the fact that several of the articles were written a year earlier for the joint AMIGOS/SOLINET meeting in May 1987.

The networking environment, as treated by the authors here, is heavily dependent upon a fast-changing technology. The mindset of the large bibliographic utilities has changed considerably in recent years to reflect the growing number of local area networks, an increased comfort with and reliance upon complex telecommunications operations, a reduced use of the utilities for original cataloging, and changes in the nature of scholarly communication. Paul M. Gherman's article on the relationship between research libraries and networking discusses this, with special reference to the large numbers of sites purchasing NOTIS and similar systems. What is not mentioned here is the capacity of systems to load LC tapes and catalog online, bypassing what was previously considered to be

the meat-and-potatoes function of the utilities and opening up a whole new range of management issues, such as: How will the networks survive and/or adapt? What happens to national resource sharing and interlibrary loan? And is a "linked system" still worth working toward?

Two very differing scenarios for the future roles of the networks are proposed by Susan K. Martin and D. Kaye Gapen. There are concerns and projections in both articles that are right on target as one reads the RLG and OCLC newsletters today, which show a firm commitment to taking a good, hard look at current operations and planning strategically for the future. Although this volume of the *Journal of Library Administration* does have some interesting historical and futuristic articles, it is not timely enough to be of much use to library administrators seeking guidance in the handling of today's management issues.—*Gillian M. McCombs, State University of New York at Albany.*

Introduction to Automation for Librarians. 2d ed. By William Safady. Chicago: American Library Assn., 1989. 363p. \$40 (ISBN 0-8389-0503-X). LC 88-39672.

This second edition of a now standard work is both updated and expanded. The text provides an excellent introduction to technology and its library applications. It is detailed, clear, and technical but not overwhelming in its technicality. Because technology has advanced considerably since publication of the first edition in 1983, the discussion is greatly modified. As in the earlier edition, the current text is "a survey of technology only" (p.viii) not addressing the human resources implications. More than half the book deals with automation fundamentals: hardware, software, data processing concepts, and automated office systems and related technologies. A substantial chapter covers each of these topics. Sections such as "Prewritten Software

Packages" are naturally much expanded.

The second part of the book contains chapters devoted to four particular library applications of automation: circulation, cataloging, reference service, and acquisitions and serials control. From one point of view, it is somewhat regrettable that the author places little emphasis on the "integrated system" concept, with barely more than a passing mention in the "Online Catalogs" section. There is also little coverage of automation's impact on interlibrary loan and resource sharing. This pattern of selective focus continues to be evident in the examples of particular systems that illustrate the author's points. For instance, CLSI is essentially absent from the text.

Most disturbing of all, especially for an ALA publication, the index is very limited and has some obvious omissions. For example, although there are at least five mentions of NOTIS in the text, only two are indexed. VTLS and Geac, both appearing as examples in the text, are entirely absent from the index. Although it is true the author refers to so many systems, if only briefly, that an inclusive index might be exceptionally long, the utility of the book is hampered by the omissions. If the intent was to use references to a particular system only to make a specific point and the author did not expect readers to look up his comments on those systems inclusively, all should have been omitted from the index. Partial coverage is misleading.

Although footnotes are deliberately avoided, each chapter has a useful bibliography of suggestions for further reading. As in the first edition, there are occasional misspellings, including J. S. Aagaard spelled "Aagard" on page 212. The lists appear to be otherwise basically accurate and inclusive of an interesting variety of approaches.

Because the field of library technology moves so rapidly, some of the most recent developments, such as "multi-database" online catalogs, are not included. This book, however, is re-

markably inclusive about the basic technology, if not all evolving applications. There will undoubtedly be future editions of this useful introduction to library automation. If so, they might ideally end with a summary chapter. At present there is no concluding material. The text simply stops at the end of the discussion of serials control. This well-written text can become even more effective in the future. In the meantime, do replace the first edition with this extensively revised and updated second edition.—Karen L. Horny, Northwestern University, Evanston, Illinois.

Notes in the Catalog Record: Based on AACR2 and LC Rule Interpretations. By Jerry D. Saye and Sherry L. Vellucci. Chicago: American Library Assn., 1989. 581p. \$60 (ISBN 0-8389-3348-3). LC 88-950.

Saye and Vellucci attempt to remedy AACR2's lack of prescriptive guidelines for and sufficient examples of cataloging notes. The authors seek to "assist in identifying standardized forms of notes" that will aid in the retrieval of machine-readable cataloging records when note fields are searchable in local online systems. Rather than merely compiling a list of notes, they also explain each AACR2 note rule within its historical context. Each rule is accompanied by a statement of relevant Library of Congress policy. The historical background is important due to the implicit carryover in practice from AACR1 to AACR2. Students of descriptive cataloging and practitioners who have cataloged only in the post-AACR2 era will find this feature enlightening.

The work provides comprehensive coverage of the various note types with more than 4,700 examples ranging across all the bibliographic formats. The vast majority of these were extracted from Library of Congress cataloging records. While the selection of individual examples is judicious, standardization of forms remains elusive. Often a variety of forms for the same note are listed with no guidance as to how to choose among them. It is also

disturbing that so many of the records from which the notes were derived date from 1981 and 1982. This raises a question as to the currency of the information, although the authors have tried to update the examples when appropriate.

The principal flaws of the book are organizational and stylistic in nature. The chapters are organized by type of note rather than by the physical medium of the item being cataloged, as in *AACR2*. The authors chose this arrangement in the hope that a note applying to one format would be helpful in solving a problem with another. While there is validity to this view, the resulting arrangement is cumbersome to use. Since the book will likely be used with *AACR2*, it would be better to arrange it in similar fashion. Collocating notes by format also mirrors how a cataloger actually works. Each rule is subdivided into a plethora of sections, which makes the book difficult to browse. Typography is used to distinguish between the sections, which results in the examples being reduced to a minute print size.

The work contains five indexes, the most useful of which are the standard topical one and the bibliographic control number index, which refers the reader to the bibliographic record from which a particular note was derived. The latter is intended to allow the cataloger to see the context in which the note was used. While this is useful, it would be more helpful to have the control number appear adjacent to the note within the text rather than in an index.

This book probably will supersede Salinger and Zagon's *Notes for Catalogers* as the standard work of its type. However, those practitioners who already own the Salinger book may want to consider whether the improvements justify the \$60 price tag.—*Patrick F. Callahan, Ball State University, Muncie, Indiana.*

Handbook for AACR2, 1988 Revision: Explaining and Illustrating the Anglo-American Cataloguing

Rules. By Margaret F. Maxwell, with a new chapter by Judith A. Carter. Chicago: American Library Assn., 1989. 436p. paper, \$27 (ISBN 0-8389-0505-6). LCCN 88-36703.

Long-time catalogers will remember the sense of trepidation and excitement in the cataloging world when *AACR2* first appeared. The new rules incorporated many significant changes from the previous code, causing catalogers to seek all the help they could find to become familiar with them.

One of the best guides to the new cataloging code was Margaret Maxwell's *Handbook for AACR2*. The *Handbook* did a particularly good job of introducing the new rules to catalogers. One of its strengths was that it provided many cataloging records illustrating rule provisions, together with title page transcriptions that helped explain the application of the rules. Now the 1988 revision of *AACR2* (*AACR2R*) has been issued. *AACR2R* incorporates changes to the rules that have been made since *AACR2* first appeared. To include these changes, as well as the Library of Congress' pertinent rule interpretations, the *Handbook* has been revised.

The format and methodology remain the same. The *Handbook* discusses *AACR2R* in rule number order, providing a nice blend of background information, history, explanations of situations not explicitly covered in the code, and practical cataloging advice. One of the most valuable features of the *Handbook* remains its use of full cataloging examples. Two chapters have been added, one on computer software and another on analysis (*AACR2R* Chapter 13). While the revised edition of the *Handbook* will not have the impact of the first edition (catalogers have had nearly a decade to get used to *AACR2*), it is still valuable for library school students and for experienced catalogers who need to deal with unfamiliar formats.

I felt the *Handbook* suffered from two minor problems. First, in the introduction the author refers at times to

AACR2 and at other times to *AACR2R*, seemingly at random. I would have preferred to have seen the original introduction reprinted, with a separate introduction to the new edition of the *Handbook*, outlining the major differences between *AACR2* and *AACR2R*, and covering the changes made to the *Handbook*. Secondly, the *Handbook* often refers to cataloging examples in other parts of the text. I found it time-consuming to refer to these off-page examples, as they are numbered sequentially within each chapter. A numbering system keyed to the page the example is on would have made look-ups easier.

A more serious problem occurs with the cataloging illustrations. The author correctly emphasizes the importance of the illustrations in the *Handbook*. It was disappointing to encounter a number of errors in the illustrations, including examples that did not illustrate the provision of the rule under discussion, and misciting of examples (not all occur on the same page as the written discussion). In spite of these problems, the *Handbook* remains a useful tool that distills the knowledge of an experienced teacher of cataloging. It is to be recommended for cataloging departments doing other than the most routine cataloging.—*Thomas Lehman, University of Notre Dame, Indiana.*

Serials Cataloging Handbook: An Illustrative Guide to the Use of AACR2 and LC Rule Interpretations. By Carol L. H. Leong. Chicago: American Library Assn., 1989. 313p. \$50 (ISBN 0-8389-0501-3). LC 88-30784.

For those catalogers and future catalogers interested in a clear, precise guide to serials cataloging, this volume is a handy tool for deciphering serials cataloging problems. Carol Leong's keen knowledge of serials cataloging is displayed in her choice of actual cases encountered as serials cataloging specialist at the University of Illinois at Urbana-Champaign.

Not since the late 1970s has there

been a handbook that addresses the problems of serials cataloging. Other publications supplied only rules and examples with no discussion or finished OCLC record. *Serials Cataloging: A Comparison of AACR1 and AACR2*, by Judith Proctor Cannan, compared *AACR2* with *AACR1*, citing points of comparison with no illustrations. Walt Crawford, in his *MARC for Library Use*, devoted one chapter to serials cataloging, but the *Serials Cataloging Handbook* is the first cover-to-cover treatment of the problems of serials cataloging involving USMARC tagging.

Serials Cataloging Handbook serves as a reference for the seasoned serials cataloger. It can be used as a refresher course for librarians who do very little original cataloging and as a supplemental textbook for the student cataloger. The author finds problems of similar types, shows how they differ, and directs the cataloger to notes that must be included within the OCLC MARC record. Example problems are clearly represented, eliminating the need to view the source. Full *AACR2* rulings and proper justifications in CSB are presented for the cataloger. The reader is therefore given all information needed for proper identification of a problem including a complete discussion of the problem under consideration.

Well-illustrated as the title suggests, *Serials Cataloging Handbook* is composed of 200 entries and contains 178 cataloging examples, with simulated title pages as the chief source of information. The chapters and titles are clear, precise, and logically organized. The selections need not be read in order but can be used as a primary reference tool. Because of the revisions to *AACR2*, references are made within the text and as part of the appendix to *AACR2R* when the numbers differ.

Serials catalogers should consider this edition a valuable addition to any technical services collection. It is an important contribution and deserves special notification for instilling some organization into the twists and turns dictated by the uniqueness of serials

cataloging.—*Jacqueline A. Douglas, City College, New York City.*

Conservation and Preservation of Humanities Research Collections: Essays on Treatment and Care of Rare Books, Manuscripts, Photography, and Art on Paper and Canvas. Ed. by David Oliphant. Austin, Tex.: Harry Ransom Humanities Research Center, The University of Texas at Austin. 166p. paper, \$17.95 plus \$1.50 postage. (ISBN 0-87959-109-9). Issued also as a special number of *The Library Chronicle*.

To its credit, the Harry Ransom Humanities Research Center has developed an internationally respected Conservation Department. Eight of the ten essays written by HRHRC practicing conservators or conservation interns provide insight into both the technical considerations and ethical issues involved in preserving unique research materials. Almost as an afterthought for inclusion, the last two essays are about preservation treatment and administration priorities.

Written by and for other practitioners in the field, the conservation essays, although well written and informative, can be tough sledding for the uninitiated librarian whose only interest is to establish a fledgling preservation program. Despite its technical level, the book is well worth reading: the essays describe the broad range of conservation issues and problems present in a research collection. Consideration of the artistic and structural integrity of a historical artifact influences the appropriate conservation treatments applied to eighteenth- and twentieth-century bound manuscripts in the Byron and D. H. Lawrence collections. A third essay describes the difficulty of providing conservation treatment for burned fragments in the William Faulkner collection. Nineteenth-century cloth case-bound books also merit informed decisions about appropriate conservation procedures. A special feature of a 500-year-old binding structure lends itself to a

contemporary solution suitable for a conservation binding. Essays on non-book materials discuss photographic conservation techniques, conservation measures for damaged paintings, and strategies designed to anticipate potential damage to traveling art exhibits.

The first eight essays reflect sound conservation standards and judgment applied to preserving carefully selected unique research materials. Of equal importance (and of which more needs to be said in this volume), is the attention paid to general library materials. While each item may not be intrinsically important, taken as part of a larger collection, proper housing for less valuable books, manuscripts, documents, and photographs is a necessary component of any preservation program. After all, even a research subject collection (defined by the Research Libraries Group as a level five), can be composed primarily of "ordinary" materials. The last two essays define the scope and nature of the problem.

In conservation work, illustrations and photographs serve an important function: they are designed to provide detail about the artifact. For the most part, the accompanying figures succeed. The illustrations are excellent in their clarity, but some of the photographs are not clear. On page 30, the black-and-white photograph does not show any difference in the tone of the washed leaf compared to the pretreated leaf. It is not immediately obvious on page 90 that the spine cloth has been reinforced—I had to use a hand-held magnifier lens to detect the repair.

Aside from these minor complaints, I recommend that this volume be added to the reference shelf of a large preservation department. The essays are clear in organization and coherent in their presentation.—*Dianne Stalker, Barnard College, Columbia University, New York.*

Guide to the Evaluation of Library Collections. Subcommittee on Guidelines for Collection Development, Collection Management and

Development Committee, Resources Section, Resources and Technical Services Division, American Library Association. Ed. by Barbara Lockett. Collection Management and Development Guides, no.2. Chicago: American Library Assn., 1989. 25p. paper, \$5 (ISBN 0-8389-3370-X). LC 89-145.

Guide for Written Collection Policy Statements. Subcommittee on Guidelines for Collection Development, Collection Management and Development Committee, Resources Section, Resources and Technical Services Division, American Library Association. Ed. by Bonita Bryant. Collection Management and Development Guides, no.3. Chicago: American Library Assn., 1989. 29p. paper, \$5 (ISBN 0-8389-3371-8).

Collection Management: Current Issues. Ed. by Sarah Shoemaker. New York: Neal-Schuman, 1989. 74p. paper, \$29.95 (ISBN 0-55570-034-9). LC 89-3258.

The Guide to the Evaluation of Library Collections is intended to provide a basic overview of the evaluation process. The introduction discusses the rationale for performing evaluation studies. In the next section the essentials of planning such a study are covered step by step. The heart of the guide consists of an enumeration of the different methods of evaluating a collection. Both collection- and user-oriented methods are discussed. There is a brief description of each technique, which is followed by a listing of its advantages and disadvantages. A substantial bibliography concludes the work. It is conveniently arranged by the techniques and aspects of evaluation that are discussed by the guide, and works are cited in more than one section when appropriate. The *Guide* will be very useful to anyone preparing to do an evaluation study. It provides sufficient information to choose the most suitable methods for a given study and directs one to more detailed works for help in carrying out the evaluation process.

The *Guide for Written Collection Policy Statements* offers similar help to those charged with developing a policy statement. An introductory section sets forth the reasons for having a written collection-development policy. Then a detailed outline of the contents of a typical collection policy statement is provided. The *Guide* stresses the need to integrate all aspects of collection management, such as preservation and cooperative arrangements, into the basic policy statement. A strong emphasis is also placed on the need for the standardization of collection policy statements. The use of the conspectus approach is recommended. A description of the RLG conspectus levels and sample RLG and Pacific Northwest Conspectus Database worksheets are provided. The *Guide* also includes a brief glossary to help standardize the use of terminology in policy statements. In an age of growing dependence on cooperative collection development and resource sharing, libraries will need to describe their collecting policies in consistent and readily understood terms. This *Guide* should be of great help in accomplishing such uniformity.

Both *Guides* are in outline form and both have detailed tables of contents to facilitate their use. The writing in each is clear and concise. Together with subsequent volumes in the series, they should provide an excellent basic reference work for all who are involved with collection management.

Collection Management is a gathering of essays that cover a wide range of current practices and concerns. It deals almost exclusively with academic and research libraries, although many of the issues discussed are relevant to other types of libraries as well.

The first four papers address the broader organizational and management issues of collection development. Carolyn Bucknall's essay, for example, notes that collection management personnel do not always fit easily into the traditional library organization chart. She presents various organizational models and discusses their re-

spective merits. Subsequent papers cover technological and economic aspects of collection management. This section is rounded out by Paul Mosher's discussion of collaborative collection development, which stresses the social and cultural aspects of such collaboration.

The next set of essays covers more specific aspects of collection management: evaluation, preservation, information technologies, and serials. Those on preservation (by Margaret Byrnes) and serials management (by Sara Heitshu and J. Travis Leach) offer exceptionally concise but thorough overviews of two of the most difficult and technical areas with which collection managers must contend.

The two closing papers, by R. H. Super and Sheila Dowd, are in some ways the most valuable. These discuss the purpose and use of research libraries and are a useful corrective to the current tendency to focus too narrowly on technical and economic considerations in managing collections. While microforms, remote storage, resource sharing, and the like may be necessary and frequently beneficial, we all too often overlook the fact that an excessive reliance on these not only is an inconvenience to users, but sometimes seriously undermines the whole process of scholarly research.

The book provides a useful overview of many aspects of collection management and is well worth acquiring. Its price, however, for a paperback of fewer than 100 pages, is outrageous.—*Fred W. Jenkins, University of Dayton, Ohio.*

The Online Catalogue: Developments and Directions. Ed. by Charles R. Hildreth. London: The Library Association (dist. in U.S. by American Library Assn.), 1989. 212p. \$40 (ISBN 0-85365-708-4).

The essays in this volume address new developments in the structure of the online catalog interface or consider new directions in the study of OPAC users. Edited by one of the leading figures in the field of OPAC research,

these invited papers give an overview of current international research.

Writers concentrating on the machine-oriented aspects of OPACs, the development of improved software and search algorithms, include Clifford Lynch, who advocates use of system data such as response time and transaction logs for understanding and thus improving patron interaction. William Mischo and Amy F. Moore describe an intelligent search interface that links the University of Illinois online catalog to BRS, assisting the user to formulate a search strategy for retrieving journal articles.

A project of OCLC and Forest Press to include DDC in the subject search capability of an OPAC indicates, according to Karen Markey, that adding classification and the relative index significantly improves subject retrieval.

Hildreth surveys OPAC design and development, concluding that second-generation OPACs are deficient tools for subject searching for several reasons. He recommends at least three modes of subject searching: enhanced Boolean, interactive term and document appraisal, and contextual subject search browsing.

Stephen Walker describes such a restructuring of the catalog database and its interface—the continuing Okapi project of the London Polytechnic. Okapi is now using “post-Boolean” search techniques, including term weighting, stemming, and relevance feedback.

Nathalie N. Mitev's essay neatly summarizes current OPAC and IR work and draws on the literature of human-computer interaction to support her argument for the importance of changing the research focus to the needs of the user.

Micheline Hancock-Beaulieu recommends user-oriented qualitative research that puts the OPAC interaction into the context of the entire information search, while Jean M. Tague employs the same user focus to examine the search negotiation process and the relationship between user language and system language.

The concluding essay by Roland Hjerpe presents a radical restructuring/deconstruction of the catalog into a hypertext form—but a form still based on the nineteenth-century objectives.

The major audience for this book will be those interested in online catalog research. Persons involved in OPAC planning and implementation should also find the theoretical considerations a useful adjunct to the business of writing requests for proposals and dealing with vendors. An essential purchase for schools of library and information science because it conveniently gathers a wide variety of research, this book is also recommended for other collections in library and information science.—*Ellen Koger, Indiana University, Bloomington.*

National and International Bibliographic Databases: Trends and Prospects. Ed. by Michael Carpenter. New York: Haworth Press, 1988. 277p. \$32.95 (ISBN 0-86656-749-6). LC 88-15285. Also issued as *Cataloging & Classification Quarterly*, v.8, nos.3/4 (1988). Note new address of publisher: 10 Alice St., Binghamton, NY 13904-1580.

As indicated by its subtitle, this volume both reports on current trends in large-scale bibliographic databases and forecasts their eventual development. An underlying theme running throughout the work is that of the necessity of cooperation. The work is arranged in three sections, "General Considerations," "International Initiatives of North American Bibliographic Databases," and "Bibliographic Databases outside of the United States." These are preceded by an introduction by the editor in which he discusses the organization and uses of bibliographic databases and their future.

The section "General Considerations" consists of three articles. The first deals with the background of the Linked Systems Project, together with its potential and the challenges it poses. The next discusses various issues involved in authority control and their

implications for large-scale databases. The third, "CONSER: Revolution and Evolution," divides the history of CONSER into four phases and details the last three (for the period of 1977 onward) and includes a discussion of the goals that have been established for the program.

"International Initiatives of North American Bibliographic Databases" contains four articles dealing with OCLC, RLIN, Utlas, and WLN, respectively, allowing the reader to compare and contrast them. An additional article reports on the development of automated vernacular cataloging for materials in Chinese, Japanese, and Korean.

The third section, "Bibliographic Databases outside of the United States," is a series of eight articles. One of these is devoted to developments in Australia and covers the Australian Bibliographic Network, the Australian National Bibliography, AUSMARC, and the role of the National Library. Another discusses the British National Bibliographic Service; and another, DOBIS and the Canadian Union Catalogue. Two are concerned with building bibliographic databases in Latin America and the Caribbean. The remaining three report on databases in Italy, Norway, and the German-speaking countries.

Since the volume is also published as a double issue of *Cataloging and Classification Quarterly*, it includes the regular feature of the journal, "Cataloging News," which is here devoted to further reports dealing with the general theme of the issue. A thirteen-page list of selected acronyms completes the book, which unfortunately lacks an index.

National and International Bibliographic Databases is indeed a fascinating work, containing much of concern both to the general cataloger and to the language or area specialist as well. It is also highly recommended reading for all those interested in bibliographic databases, their development, or their history.—*Jim Cole, Iowa State University, Ames.*



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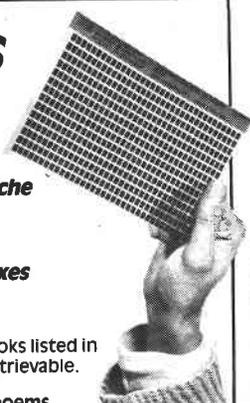
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